Report of the

NEVADA DEPARTMENT OF HIGHWAYS

For the Fiscal Years Ending June 30

1943-1944

ROBERT A. ALLEN
State Highway Engineer

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LETTER OF TRANSMITTAL

CARSON CITY, NEVADA, November 30, 1944.

HON. E. P. CARVILLE, *Governor of the State of Nevada.*

DEAR GOVERNOR CARVILLE: I am directed to transmit to you the Fourteenth Biennial Report of the Department of Highways for the period July 1, 1942, to June 30, 1944.

State Highway Engineer.

DEDICATION

❦

THIS REPORT IS DEDICATED TO EMPLOYEES OF THIS DEPARTMENT WHO HAVE PAID THE SUPREME SACRIFICE THAT WE MIGHT LIVE IN SECURITY IN OUR COUNTRY. WE MOURN THEIR LOSS.

GEORGE HARDMAN, JR.
GRAY MASHBURN, JR.
JAMES LAWSON, JR.
JAMES THOMPSON
WILLIAM EVANS
HUGH JACOBSEN
CHARLES LUND
JAMES LYND

HONOR ROLL
of the
DEPARTMENT OF HIGHWAYS

Commemorating the names of those of our staff who are serving with the active forces.

ARANT, PHIL
BAROZZI, ALBERT
BELLINGER, JOHN J.
BIELER, THOMAS, J.
BRINKERHOFF, W. A.
CLARK, CLARENCE
DALE, HOWARD
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Westergard, Einar
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Glazier, Harley
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Nelson, Alice
Ott, Chester
Primeaux, Pat
Reid, J. F.
Rogers, George
Wollitz, Elvera E.
Samproni, Vincent J.
Lawson, James Jr.†
Huhn, Andy J.
Aiazzi, Roy
Dondero, Alan G.
Laxalt, John
Nagel, Bill
Robinson, Delbert

†Gold Star. ‡Missing In Action. *Prisoner of War.

STATE OF NEVADA

FOURTEENTH BIENNIAL REPORT

OF THE

DEPARTMENT OF HIGHWAYS

For the Period
July 1, 1942, to June 30, 1944, Inclusive

ROBERT A. ALLEN
State Highway Engineer

CARSON CITY, NEVADA
STATE PRINTING OFFICE - - JACK McCARTHY, SUPERINTENDENT
1944
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LETTER OF TRANSMITTAL

Board of Directors, Department of Highways.

In accordance with provisions of section 6 of the Highway Act, your Department of Highways presents its Fourteenth Report, covering the period July 1, 1942, to June 30, 1944. Activities of the Highway Department are set forth in detail.

The excellent cooperation of the Public Roads Administration and the citizens of the State continued throughout the period reported upon to the benefit of the cooperating agencies, the citizens of the State and to our traveling public.

We appreciate very much the valuable assistance and encouragement extended by you in conducting the business of this Department.

Robt A Allen

State Highway Engineer.

FOURTEENTH BIENNIAL REPORT OF THE DEPARTMENT OF HIGHWAYS

Chapter 14 in the story of Nevada highways is presented herewith.

The operations of the department have, of necessity, been more streamlined than during the biennial period represented by Chapter 13. No extensions to the highway system were made. One bridge and a section of road, both on U S 40, were authorized for construction and partially completed during the biennium. Both of these contracts were entered into, after request and approval by the Transportation Corps of the War Department, as being necessary to keep the transportation system of the country to a high standard for the use of the military establishment. One bridge, on Nevada 12 at Logandale, in Clark County, was authorized and contracted for because of the need to get foodstuffs and milk supply from the Muddy River Valley to the military establishment at Las Vegas.

The maintenance of our highway system was kept up to the same high standard of other years. This caused expenditure of larger sums of State funds, as reconstruction, cooperative funds were not available during the biennium. Because of the lack of these funds for the last three-year period, it will be necessary that larger sums of Federal funds be expended during the postwar period to bring our highway system back to the standard that will be needed for postwar travel.

The State Highway Engineer was an ex officio member of the Executive Committee of the American Association of State Highway Officials that drafted the legislation for postwar highway appropriations presented to the House Roads Committee. Since our highway system, from its inception, has always been national and interregional and since it serves all people with highway facilities free of charge, our deliberations in drafting this legislation were based on that premise. We were opposed by interests not having all of the information necessary to properly judge. It is evident to all of us that in States such as Nevada having as our largest property owner the Federal Government, that there should be little deviation from the original Federal Aid Act for any postwar legislation that would affect all of us in our future transportation needs.

Legislation was offered to the Roads Committee which, when enacted, will provide adequate funds for needed extensions to and improvements for our highway system. Indirectly, this legislation, when enacted, will serve as a substantial stopgap in the unemployment problem which must arise immediately after the war. The proposed legislation took into consideration the fact that for three years at least, no construction of new facilities or improvements to the old highway system had been authorized and larger appropriations would be necessary to restore the system to its prewar usefulness.

Our State has the financial status to meet the enlarged Federal appropriation without increase of gas tax or the seeking of special State legislation to provide additional funds. Our natural resources have been in such demand during the war period and will so continue in the postwar period as to warrant extensive additions to our highway system if these products of our mines and soil are to be made available for manufacturing in the West and supply to the markets of the World.

In anticipation of the heavy program of construction outlined and needed in the postwar period, this department has bent its efforts toward the survey and design of sufficient extensions and improvements to the highway system to absorb any Federal aid apportionment made available. We have designed and on the shelf projects to absorb over three million dollars of funds. The work is continuing as fast as our limited design force can proceed. Equal weight is being given to the main transcontinental lines and to our secondary farm-to-market systems. Nevada still has the problem of providing improved roads for at least 75 percent of its rural dwellings. It has the assurance of the construction industry that any program which it will outline can be carried on under the contract system in the postwar period.

Our Drivers License Division has continued to function in a manner wholly sympathetic with the traveling public. One of the original objectives of the Drivers License Division was to assist in cutting down the heavy motor vehicle death rate in Nevada. The death rate in the first six months of 1944 compared to the same period for 1941, is down 64 percent while the national rate is down 36 percent. For the first six months in 1944, compared to the first six months in 1943, it is down 40 percent while the national rate is up 10 percent. If we are to achieve any real and lasting benefit in the reduction of the death toll on our highways, we must vigorously enforce all of the provisions of the Drivers License Act.

May we again call to your attention that extensions of the highway system should be studied carefully and not made for convenience only, inasmuch as the maintenance of these extensions, when constructed, as with all parts of the improved road system, is a State obligation without Federal help.

The war effort has continued to add duties to the Highway Department and its engineer. Cooperation has been extended in every way possible to the War and Navy Departments and all Federal and State agencies, asking for assistance in the war effort.

We respectfully refer you to the recommendations and to the separate sections of this report for the details of each particular division of this department.

RECOMMENDATIONS

We again recommend the adoption of a Highway Safety Division supported as other State activities are supported since the safety of so many people who are traveling on our highways is as much a public responsibility as the conservation of wild life and other control measures adopted by our Legislature.

It is again recommended that the highway revenues be not impaired by amendment or change in gas tax, plate license tax, common carrier tax, or any other highway revenue that will in anyway impair our ability as a State to meet the cooperative requirements of the Federal Government when Federal funds are made available for construction and reconstruction in the postwar period, and at the same time permit the increased maintenance cost on our highway system which we are under contract with the Federal Government to maintain to the high standard fixed by the Public Roads Administration.

We recommend that legislation be provided permitting the creation of limited access on those portions of the Interregional Highway System (U S 40, U S 91) where such limited access is necessary to provide for the safety of the traveling public.

We recommend that suitable legislation be enacted to provide the State of Nevada with a system of coordinates for designating and stating the positions of points on the surface of the earth within the State of Nevada. An Act of this kind would be an ever-increasing benefit to the Department of Highways and other engineering organizations within the State.

It is recommended that some plan of retirement and pension be made available for employees of the department. Many of our technical employees have been with the department for over twenty years. They will reach the point some day when new and younger men will be needed to take their places. In the postwar period there will be no incentive for these young men to seek technical employment with the Department of Highways unless some suitable retirement program is a part of the laws of this State. Private employment where they can enjoy the benefits of social security will be much more attractive to them.

Since section 4 of the Highway Act says that the offices shall be provided by the Capitol Commissioners, I recommend that consideration be given by the incoming Legislature to provide an adequate building to house the Department of Highways. It has long been cramped in inadequate and unsatisfactory quarters for the best efficiency of the department.

HIGHWAY CONSTRUCTION

The closing biennium has seen a marked decrease in road construction as measured in mileage and dollars. Where, in the previous two-year period, a total of 283 miles of road contracts had been awarded—covering new or reconstruction of main line and secondary Federal aid roads—in this like period, July 1, 1942, to June 30, 1944, the total was 40 miles. An expenditure of $5,928,805 for 283 miles was reduced to $1,094,687 for 40 miles. All construction referred to above involved the standard design of hard-surfaced bituminous pavements. The reason for the curtailment was obvious, with the whole of the biennium falling within the war period. The sections of roads programmed for construction for this biennium were those considered absolutely necessary—where regular maintaining would fail to meet the needs, or where cost of ordinary maintenance would exceed cost of reconstruction—such projects would become eligible for review by approving officials of the Army and War Production Boards. The program therefore was designed and limited to construction of highways considered essential and strategically necessary to serve in the war effort in transportation of troops and war materials which are as essential as any war plant or establishment.

To the 40 miles referred to above additional mileage of road improvement may be added. This applies to construction of access roads to mines producing such strategic minerals as copper, zinc, tungsten, magnesite, and manganese. Improvement of a low type construction was used consisting of grading by blade or angle dozer, and placing pit run surfacing.

Nineteen projects were thus constructed totaling 123 miles at a cost of approximately $1,400 per mile, the expenditure being 100 percent Federal funds.

Other construction performed by the department, not heretofore reported, is the flight strip program. This covers construction of landing fields in four sections of the State—Elko, Lincoln, Lyon, and Lander Counties. These projects were let by contract under department supervision, and were financed wholly from Federal funds. The basic Federal legislation for the construction of flight strips was the Defense Highway Act approved November 19, 1941, followed by State Legislation at the next regular session of the Legislature. A flight strip differs from other landing areas in that its construction is a function of highway department organizations. An airport, airstrip, or air terminal may be privately owned or publicly owned, but a flight strip is always publicly owned, and under the jurisdiction of the same highway department having jurisdiction of the adjacent highway.

In the original draft of the defense bill dating back to May 27, 1941, the definition of a flight strip is: "In order to insure greater safety on the public highways by providing additional facilities in connection therewith to be available for the landing and take-off of aircraft." The innocent definition undoubtedly was inspired by the fact that the dates for instituting and passing the bill both were prior to December 7, 1941, and Pearl Harbor, for on December 17, $5,000,000 was made available for immediate use, and purposes for which the program was inaugurated was expressed in more definite statements as: "Furnishing dispersal points for aircraft, to alleviate the crowding of main air bases and lessen the risk of larger-scale bombing losses caused by excessive concentration of aircraft. 'They will provide hopping-off points for fighter planes defending this Nation's coast lines.' 'It was disclosed that several foreign countries were cooperating in the flight strip program in order to provide support around existing airports and otherwise bolster flying routes to American defense outposts.' "

The four flight strips were constructed, each with only one runway laid out in the direction of the prevailing wind. The graded width is 500 feet of which 150 feet is hard surfaced with bituminous plantmix. Lengths of the four strips vary from 8,000 feet to 9,300, these dimensions determined by elevation of the ground above sea level and the type of aircraft which the Army intended for their use. The average cost of each strip was slightly less than $300,000 which might appear exorbitant except that if they serve as an emergency field and save one bomber from destruction they will have paid for the investment. They will be essential for private flying which undoubtedly will result after the war.

PLANNING SURVEY

The Planning Survey organizations in the various State Highway Departments were created in 1935 and 1936 at the request of the U. S. Bureau of Public Roads to serve as a fact-finding agency to gather data and compile statistics on highways and related subjects in a unified manner. The information obtained supplied a much needed reservoir of facts from which to draw conclusions relative to programming, design, and construction problems, and has proven of great value not only to the Federal authorities but also to the States. Consequently, planning has become an integral part of nearly every State Highway Department.

The original studies were divided into three main phases as follows: (1) Inventory, under which all the rural roads in the State were logged, and the mileage, roadway data, and information concerning all buildings and other cultural features collected. These data were then assembled in tabular form and also depicted by proper symbol on State and county maps.

(2) Traffic, under which a complete survey by volume and type was made for all roads in the State. Studies were also made of truck weights, origin and destination, and commodities hauled. These results were tabulated and when appropriate, shown graphically.

(3) Financial, under which all subjects relative to highway finances were investigated, analyzed, and presented by various table, charts, and graphs.

The activities of the Planning Survey in Nevada have been carried on for over eight years and new duties have been added each year. During the past biennium the war caused curtailment of some studies but the requests from Federal and Military authorities for data on which to base government policy and action have more than compensated for this reduction.

The Public Roads Administration, formerly the Bureau of Public Roads, originally participated in the support of the Planning Survey through the Hayden-Cartwright Act which permitted the expenditure of one and one-half percent of Federal Aid Highway funds on planning, the State matching these funds at the regular ratio. In 1942 a limited amount of funds, made available by the Defense Highway Act of 1941, was set up for gathering information on the strategic highway network whereby the old matching ratio was increased from 83.87 percent Federal and 16.13 percent State, to 91.93 percent Federal and 8.07 percent State. These latter funds were used up by the end of the biennium. In July of 1943 the one and one-half percent limitation was removed and the State permitted to set up an expanded budget of an amount considered adequate for carrying on needed postwar and the regular continuing studies, the State contributing at the regular matching ratio.

There follows a summary of the various activities of the Planning Survey during the past two years:

INVENTORY

The original plans called for a complete reinventory of one-fifth of the State each year so as to keep the data current. This reinventory program was started late in 1941 and by July of 1942 Washoe, Ormsby, and Storey counties had been covered. Because of restrictions imposed by the war, this phase of the survey was then discontinued with the exception of some minor catch-up work on these three counties.

MAPPING

Under the original program maps of all the seventeen counties, 48 sheets in all, and a State map were prepared showing vital highway and cultural information. In addition, there were 27 supplemental sheets showing 62 congested areas in unincorporated towns or outside incorporated areas. It was planned to revise one-fifth of these maps per year along with the reinventory program, but during the past two years work has been limited by a personnel shortage and confined to laying out the base maps and plotting the road logs for the three counties reinventoried.

The maps resulting from the initial survey provide the only complete map coverage of Nevada and during the war emergency several thousand have been distributed to civilian and military agencies.

Because they are the only complete maps of the State and because the demand and reliance on them have been so great, the Planning Survey has constantly looked for new and better methods in mapping. During the last few years the developments in aerial mapping have been of great interest and the Planning Survey has made every effort to advance this type of work in Nevada, actively cooperating in mapping one large area. In 1942, a highway field party supplied control for an area of approximately 1,350 square miles extending from Stewart south to Minden and easterly to the Walker River. The base maps were prepared by the Agricultural Adjustment Administration Laboratories in Salt Lake City, the U. S. Grazing Service providing the funds. The base maps were returned to the Planning Survey early in 1943 and tracings prepared of eight 15-minute quadrangles, at the scale of two inches equal one mile. Copies of these maps have been made available to the public at the current cost of printing.

Because aerial photos are a very useful aid in highway planning, a file of available pictures has been obtained and kept current. Many mosaics have been prepared of various sections of road under study and also for the areas surrounding Las Vegas and Reno.

In the early part of 1944, the Planning Survey was instrumental in bringing together most of the State and Federal map-using agencies in an effort to formulate a coordinated postwar mapping program, calling for complete and adequate map coverage of the State under a Nation-wide program. The purpose of this move was to try to avoid the overlapping and waste in mapping which has occurred during the past when each agency provided its own maps for its own particular purpose, as a consequence of which the total amount spent was sufficient to have provided first-class base maps of the entire State, although few were produced which would meet a national standard. The initial meeting was highly successful and a tentative program adopted in June of 1944 is scheduled for final consideration in the fall of 1944. The preliminary program has created interest in many other Western States and several are planning similar programs. It is hoped this unified effort will result in a coordinated use of mapping funds and, during the next five-year period, provide Nevada with complete coverage by high standard maps.

In line with the above program, the Planning Survey has agreed to act as a clearing house for map and survey information in Nevada. Under this arrangement, any agency or department which plans a mapping or survey project may send a notice to the Highway Department outlining the work. This is relayed to all interested parties and they in turn may submit useful information or provide for cooperative action, if desired.

For several years the Planning Survey has been gathering all available data on mapping control and it is believed a complete file of all triangulation and bench mark data is on hand. These are available to the general public on request.

The only other mapping carried on under the continuing program was the preparation of the annual traffic flow map, showing the results of traffic studies during the calendar years 1942 and 1943.

TRAFFIC

One of the most important phases of the original program was the Statewide inventory of traffic on all roads. Since 1936 continuing studies have been carried on along the principal roads in order to keep the traffic data current. At the close of this biennium "fixed" or "stationary" type recorders were constantly in operation at 15 carefully selected stations which were believed to give representative pictures of traffic throughout the State. Table 30 of the Appendix shows location and annual daily traffic for each of these stationary automatic recorders for the fiscal years ending 1939–1944, inclusive, with the total percentage increase or decrease by years. Up until June 1943 additional data had been gathered by means of a number of small "portable" type recorders, handled out of each Division Headquarters and Carson City, installed periodically at a number of stations so as to obtain traffic figures at the principal breaks along the main highways. Beginning in June 1943 the operation of these recorders was centralized and all handled by personnel from Carson City. Under this arrangement 13 schedules of from 13 to 14 stations each were set up and recorders installed for one week four times per year, once in each season. In addition 6 or 7 additional recorders were employed so that, on an average, 20 counts were obtained each week. As now set up approximately 365 sites will be covered during a year, providing traffic figures on practically every section of main highway and most of the important local roads in the State.

During the past year various manual counts have been carried on in conjunction with the regular portable operations in order to provide traffic classification and volume through towns.

The yearly results for all mechanical recorders are published in an Annual Traffic Report which, in addition, shows traffic on all U. S. highways and those State routes comprising the Primary State Highway System.

The annual traffic census taken for one week during July of each year since 1923 was conducted during the period July 20–26 in 1942, and July 19–25 in 1943. The results of this study are also published in a separate publication entitled "Tabulation of Annual Traffic Census."

One other report was prepared for 1943 showing traffic on both the Federal Aid System and the Primary State Highway System (Federal Aid plus Potential Federal Aid Highways). Tables were prepared showing mileage of rural roads on these two highway systems by surface type, traffic volume groups, and surface widths. The summary for the Federal Aid System appears in the Appendix, Table 31, page 61.

FINANCIAL

The financial section includes three regular phases of the Planning Survey and covers the following: (1) Fiscal Survey, (2) Annual Statistics, and (3) Road Life Studies. Due to the strain placed upon the transportation facilities of the country caused by the war, information on motor vehicles registered in the State was asked for by the War Department through the Highway Traffic Advisory Committee to the War Department, and the Public Roads Administration. This work involved two studies, namely: The Truck and Bus Inventory and the Industrial-Occupational Survey.

FISCAL SURVEY

The fiscal survey covers the compilation of the fiscal data on all street and road receipts and expenditures by the State and the local taxing units. During the biennium covered by this report, the work under this phase has been very limited, due mainly to the lack of clerical help and to restrictions on travel, as it is necessary to visit each taxing unit in order to analyze and compile the data.

STATISTICS

This phase covers the compilation of statistical records, graphs of motor vehicle data, and highway mileage tables. A number of reports are prepared monthly and summaries made at the end of each year.

The three major motor vehicle imposts are (1) Motor Vehicle Fuel Tax, (2) Carrier License Fees, and (3) Motor Vehicle Registration Fees. Tables 34–37, inclusive, of the Appendix to this report show comparative data by months on the above revenue for the calendar years 1940, 1941, 1942, and 1943. In addition to the impost data, Table 33 of the Appendix shows the trend of motor vehicle registration by months for the calendar years 1941 to 1943, both inclusive.

Annual reports are compiled for highway mileages by system, type of roadway, and width. At the end of each calendar year a detailed log is prepared for each of the Federal Aid routes and principal State routes. These logs contain detailed information on each section of roadway. All county lines and city or town limits are identified when survey records permit. All constructed mileage data are taken from the Road Life Studies.

ROAD LIFE STUDIES

These studies cover the unceasing inventory of construction and reconstruction. All the details of the construction features by project designation or other defined termini are recorded. The cost and source of funds together with the dates, reason, and method of retirement are also indicated.

These studies furnish a basis for estimating the probable life of each type of highway construction.

Table 32 of the Appendix shows the mileage by surface type in the various subsystems making up the designated State Highway system, as of December 31, 1943.

SPECIAL STUDIES

AVIATION

During the past two years four major flight strips have been built by the Highway Department at the request of the Army Air Forces.

Much of the preliminary information, such as wind data, obstruction, topography, etc., was supplied from Planning Survey files gathered in connection with earlier aviation studies.

TRUCK WEIGHT STUDIES

In the original 1936–1937 survey year a study of trucking was conducted under which 630 eight-hour checks were made at 36 stations located for the most part at main road intersections. The trucks were weighed, and their weight, body type, rated capacity, legal classification, carried load, origin, and destination, etc., recorded. Between July 27 and August 10, 1942, and August 2 and August 13, 1943, a repeated survey was conducted at ten of these same stations. A check was made for 8 hours on a week day during the same 8-hour period the station was occupied in 1936, and as near to the same day of the month as possible. No information on carried load or trip origin and destination was recorded during these later studies but all other 1936 data were repeated. This information was worked up in tables and compared with the 1936 records in a special report.

SPECIAL TRAFFIC STUDIES, LAS VEGAS AND RENO AREAS

In August of 1942 a special traffic survey was made at Las Vegas to provide data for alternate route studies. Sixteen-hour manual counts were taken on the main highways at the principal intersections and at each edge of town. Enough 24-hour automatic recorder counts were taken at the sites of the 16-hour manuals to provide factors for adjusting them to a 24-hour basis. From these key counts factors were developed which were used to expand to a 24-hour total short period manual counts of one- and two-hour duration taken at nearly all street intersections in Las Vegas. Counts were also made at the Charleston Boulevard Crossing of the Union Pacific in which a record of vehicular and pedestrian traffic and train movements and blockings was made.

During August and September 1942, a similar study was made for the Reno area with traffic figures being obtained for every street in Reno and also for all rural roads leading into the city limits. Checks were also made at the railroad crossings from the east city limits of Sparks to Virginia Street in Reno, and the same data obtained as in the Las Vegas study.

STUDIES FOR HIGHWAY TRAFFIC ADVISORY COMMITTEE TO THE WAR DEPARTMENT

Early in 1941 the Highway Traffic Advisory Committee to the War Department was created and has since served as an agent for gathering needed transportation data for the military authorities. Because the Planning Divisions of the State Highway Departments have been gathering this type of information for many years, funds were made available to them through the Public Roads Administration to make local studies as directed by the committee. Under this program in Nevada, maps were prepared and kept current showing for all military installations, such information as the boundaries, access roads, and other pertinent data. Charts were prepared for those highways comprising the strategic net, giving a graphic picture of road conditions including width, type, traffic, bridge data, etc. Another study was that of checking speeds and car occupancy trends four times per year. Early in 1944 a special electric timer was obtained for conducting speed checks.

The checks made were for informational value and publicity only, not being utilized as a means of law enforcement.

Early in 1942 the Truck and Bus Inventory and Industrial-Occupational Survey were added to the statistical studies of the Planning Division. The Truck and Bus Inventory involved a tabulation of all trucks and busses registered and garaged within the State. The inventory for the year 1941 was prepared by the clerical help of the Motor Vehicle and State Highway Departments under the direct supervision of the Public Roads Administration. The continuing work under this inventory has been added to the statistical phase of the survey. In addition to the foregoing studies, a survey of the occupation and industry of passenger-car owners together with weight classification and year model of the car was carried on commencing with the year 1942. The data gathered under this survey were used in compiling statistics on car usage. In the compilation of year-model data for the entire United States it has been possible to follow the trend of vehicles remaining in use each year, and through these means to determine the rate at which passenger cars are being retired from service.

These studies reveal that car occupancy from November of 1942 to June of 1944 remained practically stationary at from 2.3 to 2.5 passengers per car; but that vehicular speeds increased from an average of 38.8 to 41.5 miles per hour from April of 1943 to June of 1944.

ADVANCE PLANNING

Under section 9 of the Defense Highway Act of 1941, the Congress of the United States authorized appropriation of $10,000,000 for the purpose of making studies, surveys, plans, and estimates for future development of the strategic network of highways, including bypasses around and extensions into and through municipalities and metropolitan areas. This sum was apportioned to the various States, Nevada's share amounting to $127,539. The Act required that the allotment to each State be matched with State funds on the normal Federal aid pro rata, which in this State amounted to 16.13 percent of the total estimated cost or $24,528, bringing the sum available for the purpose of making advance engineering investigations to $152,067.

Projects for which the funds could be utilized were limited to sections of the Federal Aid Highway or Federal Aid Secondary Systems, although either might be extended, if necessary, to include the project, or a project might even be on an entirely new route which, when improved, would be substituted for existing routes of the strategic network, the Federal Aid or the Federal Aid Secondary Systems.

Projects could be selected for study only with the express understanding that the construction contemplated would not be carried out until after conclusion of the war effort. Sections which would be reconstructed or improved in the normal course of the general highway program and which are so located that there is little likelihood of material changes were not eligible. The intent of the appropriation was to provide for an exhaustive study of traffic bottlenecks on major routes in urban areas, or at points in rural areas where changing conditions might warrant revision in routing.

After considerable study six projects were inaugurated in this State as follows:

Churchill County—Investigation, surveys, plans, and estimates for improvement of Federal Aid Route No. 50 from Fallon to a point 8 miles east of Fallon.

Clark County—Investigation, surveys, plans, and estimates for improvement of Federal Aid Route No. 91 from Mormon Mesa to the Nevada-Arizona State line.

Clark County—Investigation, surveys, plans, and estimates for improvement of Federal Aid Routes 91, 93, 95, and 466 through the city of Las Vegas.

Elko County—Investigation, surveys, plans, and estimates for improvement of Federal Aid Route No. 40 through the city of Elko.

Lyon and Washoe Counties—Investigation, surveys, plans, and estimates for improvement of Federal Aid Route No. 40 from Wadsworth to a point 3 miles east of Fernley.

Washoe County—Investigation, surveys, plans, and estimates for improvement of Federal Aid Route No. 40 through Reno and Sparks and Federal Aid Route No. 395 through the city of Reno.

The studies proposed will include not only development of facilities for immediate use, but will lay the ground work for extensions and, if need be, for alternate routes or a system of routes capable of satisfactorily handling anticipated traffic for twenty or more years hence. Comprehensive analyses of traffic, including supplemental traffic surveys in urban areas, and the projection of traffic trends into the future form the primary bases of the studies, although many other factors must be considered. Among these are population increases, growth of business and industry, pedestrian volumes, parking facilities and habits, present and future mass transportation, and numerous others which might affect motor vehicle transportation. In many cases alternate routes are available, and each must be studied in its relationship to traffic requirements and effect upon other routes and upon business, as well as from an economic standpoint, coordinating the needs of trans-city and local vehicles, and balancing savings in time and cost of vehicle operation against construction charges.

In January of 1944 the President of the United States submitted to the Congress a message transmitting a report by the National Interregional Highway Committee outlining and recommending a national system of interregional highways. Two routes of the proposed system cross Nevada, approximating the alignments of U. S. Highways Nos. 40 and 91. The projected system would provide a high-speed highway with limited accesses, all grade crossings being eliminated in urban areas with access permitted only at designated points at which safe facilities for entrance and exit would be provided. Congress has not yet taken action upon the report, but the possibility of favorable action has led to the inclusion of possible routes for an interregional highway in the advance planning studies.

Work is in progress on four of the projects, those in the cities of Elko, Fallon, Las Vegas, and the Reno-Sparks area. Progress has been slower than anticipated, because of difficulty in securing experienced personnel; however, studies and reports on three of the projects are well advanced and will be completed within a few months. Field surveys and preparation of plans will be started as soon as possible thereafter.

DESIGN—SURVEYS AND RECONNAISSANCE

During this biennium reconnaissance and location surveys have been considerably curtailed. This curtailment is primarily due to the national war effort, which has affected a pronounced lack of suitable engineering personnel. These conditions are largely reflected in the comparative survey costs per mile as shown in the Appendix table. However, this decrease in surveys is in balance with regard to the highway construction program for the same period. Due to a lack of Federal appropriations, highway construction has been at a very low ebb.

During the last quarter of this biennium survey work has been somewhat increased, at least as much as limited engineering personnel will allow. This increase in surveys is necessary in preparing for the contemplated postwar highway construction program. Due to more elaborate and modern roadway designs, location surveys are much more extensive and require considerably more detail work than formerly.

On relocation surveys of the primary routes, especially those designated as interregional highway routes, an effort is being made to establish as nearly as possible a permanent location of the highway. Not only has an attempt been made to decrease the curvature and grades when reconstructing the older highway sections, but when surveying for new construction, the same type of location in keeping with modern highway design is adhered to. On future reconstruction, this type of location will minimize old road scars and utilize practically all excavation work performed on previous construction.

In the Appendix is a table showing the total amount of surveyed mileage, segregated by the several counties, completed during the biennium. No attempt has been made to segregate the surveyed mileage into heavy or light construction projects. In this table, the miles of surveys as listed include only the adopted mileage over which construction is anticipated, and excludes all preliminary and alternate surveys sometimes necessary to determine the most feasible and economical location. The cost of preliminary or alternate surveys and the cost of surveys for obtaining special or additional data on various difficult sections is included in the cost of the surveys. Preliminary and alternate surveys are necessary on certain projects and are a definite part of the ultimate survey costs, and therefore are prorated into the projects on which they occur, and are included in the per-mile cost and total costs of surveyed mileage for the biennium.

DESIGN—ROADWAY

All possible refinements are being incorporated in the geometrical features of the roadbed cross section and grade to provide the traveling public with a facility which is as near the ultimate in highway transportation requirements as present trends now indicate, and will still provide these refinements with the funds available.

Basic design principles have become stabilized during this biennium and few changes have been inaugurated. Progressive improvements have been made, however, and these improvements incorporated in design have permitted increased speeds with a greater degree of safety and comfort.

With the exception of defense access roads, built to war industrial areas or sources of strategic raw materials, no roadway has been designed less than 24 feet in width with a 20-foot surface, and roadbeds of this width are being used for secondary roads with very light traffic. On roads carrying a medium amount of traffic a roadbed width of 32 feet with a surface width of 22 feet is being used, while on heavily traveled roads and major highways a roadbed width of 32 feet or 40 feet with a surface width of 24 feet will be provided. Over the latter sections the 40-foot width will be used except through mountainous areas where the construction costs would be excessive. Through mountainous areas traffic travels at reduced speeds and a roadbed width of 32 feet provides ample safety and comfort at a considerable reduction in cost.

On all sections of the highway system an endeavor is made to design the roadbed on the same standard adopted for its location or alignment in order that a balanced design is secured, providing adequate service to adjacent areas, abutting properties, through traffic, safety of vehicular operations; all as economically as feasible.

On the main or primary highways long tangents and large radius curves are desirable since they provide sufficient sight distance for safe passing movements at prevailing speeds. The roadbed is designed to provide sufficient width for vehicles traveling at high rates of speed, to decrease the probability of traffic accidents. A large portion of the substandard sections on the primary highway system were designed during the early part of this biennium, but the war stopped practically all construction, and the plans, specifications, and estimates were filed for use in the postwar period.

On April 14, 1941, the President appointed a National Interregional Highway Committee to investigate the need for a limited system of national highways to improve the facilities now available for transportation and to recommend improvements. This committee report was made available early in January 1944 through the Public Roads Administration to agencies engaged in the administrating, planning, designing, constructing, and maintaining of highways. Recommendations as to standardizing design principles on all sections of highways which are a part of the proposed interregional routes have been adopted in part, and are to be adhered to during the postwar construction. The adoption of these standards necessitated a redesign of portions of many sections which had been previously completed. These changes provide smoother grade lines and larger radius curves, thus increasing sight distance to the minimum allowable for passing. Traffic volumes had to be estimated by projecting the yearly increase several years into the future. Traffic density, prevailing speeds, and sight distance requirements eliminating nonpassing zones necessitated the changes in the plans which had been completed. The remainder of Nevada's design standards were equal to or better than those proposed in the Interregional Highway Committee Report.

The war has greatly affected the design department's activities as well as depleting the staff. The department has employed feminine computers and delineators for the first time, and they have made a very creditable showing, assisting greatly in preparing the backlog of plans we now have ready for release in the postwar period.

For summary of plans completed during the biennium refer to Table No. 26 in the Appendix.

DESIGN—BRIDGES AND GRADE SEPARATION STRUCTURES

The activities of the bridge department were considerably curtailed during the early part of the biennium due to the absence of its personnel. At one time the entire staff was loaned to the Public Roads Administration for work on the Alaska Highway where they remained for six months.

Timber became difficult to obtain while reinforcing steel has become available, enabling the department to resume design of normal types of reinforced concrete bridge construction.

During the biennium, only four new structures were constructed or construction started, the total cost of which will amount to $102,062, not including approaches and channel improvement.

In January 1943 the bridge over the North Fork of the Humboldt River on Highway U S 40 in Elko County was destroyed by flood. The old structure was replaced by a reinforced concrete bridge, 79 feet long, and provided a roadway 40 feet wide between curbs. The flood also revealed the necessity of increasing the size of several culverts in the vicinity. Two reinforced concrete box culverts, under construction by another contract, were enlarged, making them large enough to be designated as bridges.

The other bridge under construction is the reinforced concrete bridge over the Muddy River near Logandale in Clark County. The old timber bridge at this site has been in bad condition for several years and had become so dangerous replacement was necessary. The new bridge is of an unusual design, being a reinforced concrete rigid frame structure with the two main piers consisting of one hexagonal column each. This type was decided upon to accommodate the large skew of the Muddy River without skewing the main portion of the bridge.

The department has prepared plans for the construction of a bridge over the Carson River in Brunswick Canyon for Ormsby County, utilizing steel girders from abandoned turntables of the Virginia and Truckee Railroad.

In preparation for postwar work, plans have been completed for five bridges, having a total estimated cost of $149,300; bridge over Sierra Pacific Power Company canal on Highway U S 40 near Verdi; widening overpass over Southern Pacific Railroad on Highway U S 40 near Fernley; bridge over Carson River overflow channel on Highway U S 395, six miles south of Carson City; and two bridges over the California Wash on Highway U S 91, about 35 miles northeast of Las

Vegas. In addition, plans are well along for the widening of four structures on Highway U S 40 near Dunphy in Eureka County.

Considerable preliminary work has been performed on plans for grade separation of the Southern Pacific Railroad in Reno, grade separation of the Union Pacific Railroad on Charleston Boulevard in Las Vegas, grade separation of the Southern Pacific Railroad in Winnemucca, and grade separation of the Western Pacific Railroad south of Wells.

RIGHT OF WAY

Pursuant to the suggestions made in the Report of the National Interregional Highway Committee, outlining and recommending a National System of Interregional Highways, considerable time has been taken during the past year in preparing and submitting right-of-way requests for a considerable acreage, to meet anticipated wider right-of-way needs. The acreage in these latter requests have not been acquired, but are at the stage of completion when and if the postwar program is approved.

The major right-of-way acquisition during the biennial was for the Defense Access War Industry Project No. 44, through the city of Las Vegas, and while the department did not acquire title to the land, it performed all of the work of engineering, plans, and preparation of deeds, together with getting the signatures for the same.

During the last biennial numerous mine to market projects were constructed, over right of way which was certified to by this department, only to the extent that it was clear of obstructions and as the alignment followed very closely the existing county road, there was no need for additional right-of-way acquisition.

Right of way for the four government flight strips acquired during the last biennial consumed considerable time in running down title and abstracts to meet the requirements of the Government, inasmuch as the title was to be vested in the United States.

Additional right of way was acquired for the Reno Maintenance Plant and a new maintenance site was acquired at Searchlight, Nevada.

At the close of this biennial, the department had acquired a total of 266.52 acres of privately owned land at a cost of $412, or at the rate of $2.47 per acre. Acquisition of Government-owned lands in the amount of 1,351.90 acres has been secured at no cost to the department. The average unit cost of all lands acquired for right-of-way purposes was $0.25 per acre.

REVOCABLE PERMITS TO OCCUPY PORTIONS OF RIGHT OF WAY

(Issued During Biennium July 1, 1942, to June 30, 1944)

Section 19 of the State Highway Law requires that no State highway shall be dug up, crossed, or otherwise used for laying or relaying pipe lines, ditches, flumes, sewers, poles, wires, or railways, or for other purposes without the written permit of the State Highway Engineer, and then only in accordance with the regulations prescribed by said engineer. The Motor Vehicle Act further limits the size, weight, and type of vehicle that may be operated over or upon the State highways, and requires that permission must first be obtained from the State Highway Engineer, and with the regulations prescribed by said engineer.

In accordance with this requirement, the department has issued 85 such permits, prepared in the form of a revocable permit, since right of way purchased by the Highway Department is to be used solely for highway purposes. Title and rights cannot be granted for other purposes except they are subject to revocation should highway construction require they be moved or removed. All costs appurtenant to such revocable permits either in exercise of the permit or due to revocation are at the sole cost of the permittee. Permits so granted are subject to 30 days' notice of revocation and are to be removed or adjusted within that time at their own expense; and in the event they are not removed, the department reserves the right to remove them and assess the cost of such removal or adjustment to the permittee.

Permits granted to individuals and corporations during the biennium ranged from permission to transport buildings, a large boat for the Navy, power shovels, and for telephone, power, water, sewers, and gas lines crossing or encroaching upon highway right of way.

A table of revocable permits issued during the biennium follows:

Classification	Number
Approach road	1
Power line	19
Sewer pipe	6
Telephone line	27
Water pipe	21
Miscellaneous	11

MATERIALS TESTING AND RESEARCH

During the two-year period covered by this report there has been a marked change in distribution of the kinds of work performed by the laboratory as well as a considerable drop in volume—5,326 samples were tested in 1942–1944 compared to 9,282 in 1940–1942 and 9,235 in 1938–1940.

In normal times the volume of samples and the time and labor spent on tests and inspections of materials going into actual construction are greater by far than in any other phase of work performed by the Materials and Research Department. Occupying second place are the field and laboratory investigations of subgrade and material deposits made prior to construction. The balance of the work is divided between research projects, preparation and review of specifications, tests and inspections of materials used in highway maintenance and those connected with traffic and safety, and services performed for agencies and organizations outside the Highway Department.

Wartime conditions have brought about curtailment of highway construction with an attendant drop in volume of testing. Hence, the preconstruction phase of testing has moved into first place. However, the construction of several Army and Navy bases and airfields and other emergency works in nearby areas has added materially to the number of "construction" samples run through the laboratory during this biennium.

Nevertheless, that a definite drop in volume of tests related to construction occurred is best illustrated by comparing the following figures for several materials:

Biennium	Reinforcing steel	Metal culvert pipe	Other metals	Portland cement	Road oils and asphalts
1938–1940	362	986	22	181	1,296
1940–1942	198	788	93	148	1,290
1942–1944	30	4	7	58	948

The drop is most marked in case of metallic materials, but the trend is also very apparent in Portland cement and asphaltic materials. Many samples of the latter, however, came from highway maintenance, which has not been so much curtailed, and some have come from outside agencies.

The principal type of work performed for outside agencies was the testing of concrete cylinders which is shown by comparing the figures for the last two bienniums—1,549 cylinders were tested in 1940–1942, and 2,149 in 1942–1944.

The laboratory performed services for the following projects outside the Highway Department during the biennium: The U. S. Navy Auxiliary Air Station at Fallon, the Naval Ammunition Depot at Hawthorne, the Reno Army Air Base, Sierra Ordnance at Herlong, California, Cochise Airport at Cochise, Arizona, Airports at Lovelock, Winnemucca, Austin, and Minden. In addition, testing services of a minor nature were performed for a number of Nevada contractors and several individuals. A nominal charge is made for such services.

During the past biennium, the Standard Specifications have been completely revised and several special projects have been undertaken. Special projects include a study of sodium sulphate resistance of Portland cement mortars, the coating of various types of aggregate by asphalt films, application of the proposed capillary rise test and coefficient of permeability determination to materials for subgrade and backfill, and several minor projects. In addition, a partial pavement evaluation study in connection with flight strips was made and reported for the U. S. Engineers, and later when this work was undertaken by the U. S. Engineers themselves, they were accompanied and observation of their methods were made on several flight strips.

Investigation of foundation materials and water table were made for the Bridge Department at several structure sites, and a field and laboratory investigation of wartime traffic paints was made in cooperation with the Traffic and Safety Department.

Only one important piece of new equipment was added during the biennium, a large electric oven to aid in overcoming a "bottleneck" which had developed in drying samples undergoing the sodium sulphate soundness test. Due to the difficulty in securing new equipment, especially articles electrically operated, the addition of other pieces probably will have to wait until the war is over.

The following table shows the classification and number of samples tested during the biennium. Field tests are not included:

Base, Surfacing and Fill Materials—	
Surfacing and base (preliminary)	589
Surfacing (crushed and screened)	38
Base, Type 1 (roadway samples)	43
Base, Type 2 (crushed and screened)	24
Screenings (crushed and screened)	20
Sand screenings (pit run)	1
Borrow	37
Soil (Subgrade)—	
Physical and chemical tests	762
Concrete Materials—	
Portland cement	58
Fine aggregates	78
Coarse aggregates	75
Concrete cylinders	2,149
Concrete beams	25
Concrete building blocks	5
Curing compound	2
Water for concrete	19
Rock for rip rap	9
Metallic Materials—	
Reinforcing steel	30
Corrugated metal pipe	4
Barbed wire	5
Woven wire	2
Bituminous Materials—	
SC–1	3
SC–2	13
SC–3	69
SC–4	15
SC–6	199
MC–1	88
MC–2	166
Bituminous Materials—	
MC–3	31
MC–5	1
RC–2	8
RC–3	6
ROMC–3	3
Asphalt, 60–70 Pen.	6
Asphalt, 120–150 Pen.	93
Asphalt, 200–300 Pen.	262
Emulsified asphalt	20
Asphalt joint filler	1
Pipe Other Than Metal—	
Concrete culvert pipe	8
Vitrified clay culvert pipe	1
Vitrified clay sewer pipe	1
Chemical Analyses—	
White paints for timber and metal	21
Red lead paint	1
Black paint	3
Traffic lacquers and paints	22
Minerals	156
Soils	5
Sand concentrate	1
Lead alloy	1
Water (complete analysis)	11
Mineral for fertilizer	1
Gravel for concrete and surfacing material	2
Miscellaneous Materials—	
Premolded expansion joint, fiber	6
Plastic road marker	1
Iron ore for ballast	1
Rock and slag wool	2
Extraction of bituminous-treated aggregates	120
Not classified	3

ROADSIDE IMPROVEMENT

All work pertaining to roadside improvement, except that included in regular design for new construction, has been discontinued for the duration of the war. The freezing of Federal aid highway funds for such development has prevented further work.

A State-wide survey reveals there are a number of sites suitable for the development of roadside improvement projects when funds become available for that type of work. These could well be included in the program for postwar activities.

TRAFFIC AND SIGN DIVISION

TRAFFIC LINE

Due to the curtailment of new road construction during this period, and our inability to obtain satisfactory traffic lacquer, for a certain period, our striping program has been reduced approximately 80 per-cent over the preceding two-year period. Our records show that only six hundred and fifty-five miles of white center line and ninety and five-tenths miles of yellow barrier or "no passing" line was placed during this period.

While the above indicates a sizable reduction during this biennium, it does not mean that the safety zones on our highways have been neglected. The decreased flow of traffic caused by restrictions placed on unessential travel has lengthened the life of existing lines, and our retracing program has been reduced to a minimum, however, sufficient to safeguard the present users of our highway system. All new or reconstructed sections of roadway have been properly striped.

The segregation of highway traffic and pedestrians into properly marked traffic lanes has been a medium for the reduction of highway accidents, and the furtherance of these protective measures has been given full consideration in planning and designing our postwar highways.

SIGNS

Our transportation system must operate safely and without delay twenty-four hours a day. The around-the-clock traffic means that traffic hazards and direction on streets and highways must be clearly marked by signs which give twenty-four-hour service in order to keep this vital system operating on schedule.

Our well-equipped sign production unit, located in the Reno equipment yard, has been operating efficiently and to the benefit of all who use our highways. Standard signs of all types needed for the direction and guidance of our traveling public have been processed in our central plant.

On June 30, 1944, there were 1,998 stock or standard signs on hand. These signs of various types and sizes were sufficient to fill most any request from outlying divisions for standard markers.

During the two-year period, 108 special signs, 155 reflectorized, and 255 plain signs were distributed for installation on the State system.

Roadside maintenance of signs which has been made necessary due to vandalism and deterioration has been performed by repairmen with mobile equipment. The work, however, since the start of the war has been confined to strategic routes.

In order to meet the anticipated problems of the high-speed routes of the future we are experimenting with new type reflectorized backgrounds and captions for highway markers. Tests are being made in our shop and on the highways to determine the feasibility of the proposed departures from our present standards.

FINANCE—OPERATION

Revenue received by the department from State sources decreased considerably during the biennium from the previous two-year period.

This decrease was due principally to the large falling off of receipts from gasoline and use fuel tax. Although the gross decrease in revenue from this source was only $430,483.31, or 12.04 percent less, the net shows a decrease of $589,704.44, or 17.88 percent. This was on account of the large increase in gasoline tax refunds of from $277,268.62 during the last biennium to $436,489.75, which was due mostly to refunds being made to contractors working on war defense projects.

We anticipate a further decline in revenues from this source providing gas rationing still continues and no new construction work is started.

Expenditures also show a large decrease on account of the reduction of highway construction work as no Federal appropriations were made, therefore very few road contracts were let.

Since all State Highway bond and County-State Highway bond obligations of the department have been paid, we are eliminating these tables from this report.

In addition to the regular Federal aid allotments we have utilized other Federal funds in doing construction work for the Public Roads Administration. There was allotted and put under agreement $1,963,276.29 of access funds for work on defense highway projects, and of this amount the department has expended on work completed or under way $1,908,369.45.

The department also constructed four flight strips with special funds allotted by the Federal agencies.

On account of the reduction in construction work it was not necessary that we retain the full amount of $600,000 advanced to the State in 1942 as a trust account in order to promptly pay contractor's estimates, therefore, we have refunded $400,000 to the U. S. Treasurer. The balance of $200,000 will be repaid as soon as the Federal projects under way are completed.

Tables showing receipts and disbursements for construction, maintenance, and operation are appended.

MAINTENANCE OPERATIONS

For administrative purposes the State Highway Department consists of five field divisions, each in charge of a division engineer, with an assistant, and the headquarters office in Carson City.

The division engineers, with the cooperation of the maintenance engineer, are responsible for the maintenance of all highways and highway facilities of the State Highway System.

The duties of the maintenance engineer include coordinating all maintenance operations between the division engineers and the headquarters office, investigation and recommendations for uniformity in maintenance operation and practices, betterment work, and advises the division engineers monthly of maintenance expenditures so that budget allotments will not be exceeded.

The portions of the State Highway System constructed with Federal funds are inspected twice each year by an engineer from the Public Roads Administration, and the State is required to maintain to the approved standards such portions of the State Highway System.

In June of each year the maintenance budget is prepared for the ensuing fiscal year. Funds are allotted for general maintenance, bridge maintenance, betterment work, and administrative charges against operations in each division. A reserve fund is also set up to provide for extraordinary maintenance operations occasioned by snow removal and floods.

Due to a considerable decrease in gas tax revenues, the principal source of funds for departmental activities, rigid economy has been necessary, consistent with satisfactory maintenance operations.

A complete record of all maintenance operations for the biennium, together with other information, will be found in the tables included in the appendix to this report.

DIVISION OPERATIONS

DIVISION NO. I

Division No. 1, with headquarters in State-owned administration building, Las Vegas, includes that part of the State Highway System within Clark County and portions of Lincoln and Nye Counties, a total of 474.11 miles of State highways.

During the biennium, four construction and reconstruction projects were under way. The four-lane highway between Las Vegas and the Basic Magnesium plant at Henderson, for which the contract had been awarded late in the previous biennium, was completed at a cost of $520,989, becoming the first four-lane highway in the State. A pedestrian underpass between the Basic Magnesium plant and the Henderson townsite on this section at a cost of $7,209. An access highway along Charleston Boulevard by-passing the business district in Las Vegas, length 4.30 miles, was constructed at a cost of $112,430. In March 1944 a contract was awarded for the reconstruction of the Logandale bridge over the Muddy River in the Moapa Valley, for an estimated cost of $79,502. At the close of the biennium this project was about one-third completed.

General maintenance was carried on with a reduced personnel, which limited operations. During the biennium, the maintenance forces reconditioned 24 miles of roadmix bituminous surface and applied a bituminous surface treatment with screenings, and constructed a new maintenance station, including garage and equipment storage sheds, at Searchlight.

DIVISION NO. II

Division No. II, with headquarters in the Washoe County Library Building, Reno, includes that part of the State Highway System within Churchill, Douglas, Lyon, Storey, Washoe, and portions of Lander, Mineral, and Pershing Counties, a total of 754.49 miles of State highways.

During the biennium, highway construction was curtailed except on projects essential to the war effort.

On Highway U. S. No 40, part of the strategic network of the military highway system, between the California-Nevada State line and 2.30 miles east, a plantmix bituminous surface was placed on the roadmix surface, and the surface widened from 20 feet to 25 feet.

Highway U S 395, between Reno and the California-Nevada State line, was reconstructed to serve the traffic to and from the Reno Air Base located about 7.0 miles northwest of Reno. Between Reno and the Air Base a plantmix bituminous surface was constructed upon the existing surface. Between the Air Base and the State line, the highway was reconstructed, the north 3.50 miles constructed on new alignment.

The outstanding project of the biennium was the construction of the Churchill flight strip, adjacent to Highway U S 50, located about 35 miles east of Carson City, in Lyon County, for use of the Army Air Forces. The project included the construction of a graded area 500 feet wide, 9,200 feet long, with paved runway and extensive drainage system. The work was performed in a record time of 89 days at a cost of about $278,500.

Construction of three access roads to mines in the division was completed during the biennium by State forces, using State road equipment. The work was grading, draining, and placing of select material wearing surface. The access roads were as follows:

1. Imlay to the Greenan-Kerr Copper mine, Pershing County, length 23.10 miles.
2. Lovelock to Segerstrom-Heizer iron mine, Pershing County, length 6.10 miles.
3. To the Northern Lights Copper mine, Lyon County, length 5.00 miles.

Maintenance activities were carried on during the biennium as in previous years with no unusual change in operations.

From Sparks to Vista and between Derby to 2.30 miles east on Highway U S 40, the roadway was resurfaced with a plantmix bituminous surface treatment with screenings. Between Lawtons and the west city limits of Reno, sections of the old surface which were becoming fractured were resurfaced with a roadmix bituminous material, and a bituminous surface treatment and screenings applied.

At Fallon, an adequate garage for storage of State equipment was constructed to replace the loss of the old garage, totally destroyed by fire.

Snow removal was not unusual throughout the division, though considerable difficulty was encountered between Reno and the Reno Army Air Base in keeping ice removed or from forming on the surface because of the heavy traffic. Any snowfall was immediately compacted or glazed, practically eliminating the use of snow plows but requiring the application of sand and salt with every storm regardless of how light the snowfall.

This heavy traffic amounting to between 1,600 and 1,700 vehicles daily is due to the operation of the Reno Army Air Base located approximately 8 miles north of Reno, and to the Sierra Ordnance Depot 50 miles north thereof.

DIVISION NO. III

CONSTRUCTION

Division No. III, with headquarters in Elko, includes that part of the State Highway System in Humboldt County and portions of Pershing, Lander, Eureka, and Elko Counties, a total mileage of 612.40 miles of State highways.

Three contracts on Highway U S 40, awarded prior to July 1, 1942, were completed during the last half of 1942. One contract covered the reconstruction of the highway between Elko and a point 6.00 miles east. Two separate contracts included the reconstruction of the highway from one mile west of Stonehouse in Humboldt County to 0.75 mile east of Battle Mountain in Lander County, a length of 21.21 miles. The three contracts, totaling 27.20 miles of two lanes, 12 feet each, with plantmix bituminous surface exceeded $750,000 in cost.

The contract for the construction of a feeder road on State Route No. 40, from Elko to five miles southeast toward Lamoille, was awarded October 9, 1941. Because of unfavorable weather the work was suspended and further deferred because the contractor was engaged in essential war work. On December 18, 1942, the War Production Board issued a stop order and a revocation of preference rating. The Highway Department granted the contractor an indefinite extension of time.

No work has been performed on this project to the end of the biennium.

The contract for the construction of a reinforced concrete bridge, 79 feet in length, on Highway U S 40 over the North Fork of the Humboldt River, to replace the concrete and steel bridge totally destroyed by flood on January 23, 1943, was completed at a cost of approximately $40,000 during 1943.

The reconstruction of a portion of Highway U S 40 between six miles east of Elko and one-half mile east of the bridge over the North Fork of the Humboldt River, length 9.82 miles, was placed under contract in December 1943, but was unfinished on June 30, 1944. The estimated cost of this project is approximately $339,200.

On June 30, 1944, bids were opened for the proposed construction of a secondary road, Humboldt 18-A, between the junction with Highway U S 40 near Golconda and 4.84 miles northeast. This work includes grading, gravel surface, minor drainage structures and a seven span timber and concrete bridge 151 feet long. The estimated cost of this project is $90,650. The contract had not been awarded as of June 30, 1944.

During the biennium two flight strips were constructed, the first about five miles west of Owyhee and the second about 3.50 miles east of Battle Mountain. The Owyhee flight strip was placed under contract September 16, 1942, and completed on September 26, 1943. The construction consisted of a graded area 500 feet wide and 8,000 feet long, stabilized with heavy gravel base, and the runways, 150 feet wide and 6,700 feet long, paved with a plantmix bituminous surface. The estimated cost of the project was about $336,625. The Battle Mountain flight strip was placed under contract on August 23, 1943, and completed November 10, 1943. This construction consisted of a graded area 500 feet wide and 9,300 feet long, stabilized with heavy gravel base, and runways, 150 feet wide and 7,300 feet long, paved with plantmix bituminous surface. The cost of this project was about $380,400.

DAY LABOR CONSTRUCTION

During the biennium, Highway Department forces constructed 62.90 miles of mine access roads. These roads were of a low type as regards alignment, grades, width and thickness of surface, being intended only for assistance to mine operators in moving strategic metals to mill or railroad. The total cost of these roads was $111,271.

MAINTENANCE

The item of greatest interest was the loss of the bridge over the North Fork of the Humboldt River, 16 miles east of Elko on Highway U. S. 40, by flood waters on January 23, 1943. This flood was the largest recorded since 1910, and occurred when the runoff from warm rains and melting snow exceeded the capacity of the river channel. The loss of this structure closed Highway U S 40 to motor vehicle traffic for twelve days. During that period traffic was routed over Highway 50 between Wendover and Fernley, except for the transcontinental passenger bus lines which transferred passengers over a temporary foot bridge.

The highway was opened by constructing a one-lane temporary timber bridge immediately below the old bridge site. Telephone and power poles were obtained from local telephone and power companies and used for piling. Stringers and other timber were secured in Salt Lake City and delivered by truck to the site of the work. A timber bridge, 12 feet wide, with four 15-foot spans, was constructed and served until the new 65-foot concrete structure was completed.

General maintenance was slowed during the past two years due to loss of experienced men and difficulty in securing replacements. Snow removal was about normal or below previous years, while rainfall was above average. The principal work of the maintenance was repairing old roadmix oil-gravel surfaces.

EQUIPMENT MAINTENANCE

The Division III shop at Elko is manned by one foreman, one senior mechanic, one junior mechanic, and a shop clerk. All units are repaired and serviced in this shop except minor repairs often made in the field by a traveling mechanic with the aid of a fully equipped service truck. Equipment failures increased due to age of units, and delay in securing replacement parts kept equipment out of service for longer than normal periods.

DIVISION NO. IV

Division IV, with headquarters in the State-owned division office building in East Ely, includes the part of the State Highway System within White Pine County, and portions of Elko, Eureka, Lander, Lincoln, and Nye Counties, a total of 676.56 miles of State highways.

During the biennium, construction work on the State Highway System in this division was completely eliminated due to wartime restrictions.

The only work performed in the division by contract was the construction of the Delamar flight strip in Lincoln County. This project, costing about $167,000, was supervised by the department acting for the Public Roads Administration, and the department was reimbursed 100 percent for the cost of the entire project.

Other new road work consisted of the construction of nine access roads with State forces and State-owned and rented equipment. Six projects, totaling 29.15 miles of grading and gravel surface roads, were completed during the biennium. The seventh project, length 63 miles, was about 50 percent complete at the close of the biennium. All access road work was financed by the Public Roads Administration, the State receiving 100 percent Federal aid.

Of the 676.56 miles of State highways in the division, 622.16 miles are hard-surfaced, while the remainder are semi-improved, graded, and partly graveled. This mileage was maintained by ten crews of one to three men working from stations outside of headquarters, and a headquarters crew of five to ten men. All extra work, such as reconditioning roadmix surface, sealing and sanding surface, repairing washouts, was done by the headquarters crew.

During the biennium a new maintenance garage and yard were established at Pioche, and a dwelling house was built at the Geyser Maintenance Station to replace the one destroyed by fire.

DIVISION NO. V

Division V, with headquarters at Tonopah, includes the part of the State highway system within Esmeralda County, and portions of Nye and Mineral Counties, a total of 567.11 miles of constructed State highway.

The only contract construction in this division during the biennium was the access road from Luning to Gabbs Valley on State Route No. 23, with the spur road from Route No. 23 to Brucite, a total length of 32.98 miles, and the construction of a roadmix bituminous surface on the access road from the junction with Highway U S 6, 12 miles east of Tonopah, to the Tonopah Bombing and Gunnery Range, length 19.83 miles.

During the period, State forces and equipment graded and surfaced, with pit run gravel, the road to the Bombing and Gunnery Range, length 19.38 miles, at a cost of $25,200; graded, graveled, and constructed a roadmix bituminous surface from Gabbs Valley to Highway U S 50, length 30.37 miles, at a cost of $132,974.95; and graded and graveled the access road from Highway U S 95 to the Crowell Flourspar mine, length 3.50 miles, at a cost of $8,000.

State forces also reconstructed the connection between State Route No. 23 and the spur road to Brucite, in order to eliminate traffic hazard at this junction.

Betterment work completed during the period included the placing of additional gravel surface on several miles of State Route No. 3A in Fish Lake Valley; constructing 1,200 feet of dike and riprap to protect the highway, State Route No. 8A near Round Mountain; widening the roadbed on several miles of State Route No. 8A north of Tonopah; widening and flattening roadway slopes on portions of Highway U S 6 between Tonopah and the Tonopah Air Base; the application of an asphaltic seal coat on 125 miles of roadmix bituminous surface on various sections throughout the division; and reconditioning and applying asphaltic seal coat and screenings on Florence Avenue and Main Street in Tonopah.

Regular maintenance work has been curtailed somewhat due to war conditions, two regular maintenance crews having been discontinued and other sections lengthened proportionally.

EQUIPMENT DIVISION

During the biennium ending June 30, 1944, and due to war conditions, new construction at the Equipment Division, located midway between Reno and Sparks, has been limited to the construction of a gasoline and diesel storage installation, the construction of which as a separate unit removed a dangerous fire hazard previously existing. The gasoline and diesel storage unit was constructed from materials available without priorities and with labor furnished from the personnel of the Department.

All buildings and shop equipment have been kept in good condition by repairs where necessary, buildings kept painted, and all preventive maintenance done when required.

New equipment purchased during the biennium follows:

6 Trailers.	2 Sweepers.
5 Sedans.	1 Kettle.
5 Conventional drive trucks.	2 Chip spreaders.
4 All-Wheel drive trucks.	3 V-Snow plows.
1 Distributor, truck-mounted.	6 Blade snow plows.

All new equipment purchased during the biennium required approval of the War Production Board, and individual priorities were issued for each purchase. The cost of the new equipment was $66,379.51.

During the biennium, the department's equipment used by the maintenance divisions traveled 4,041,966 miles in its course of work, and a large percentage of this mileage was traveled by equipment that in normal times would have been traded in. This, of course, has greatly increased the repair and overhaul work done at the division shops at Elko, Ely, Las Vegas, Tonopah, and at the Reno plant. During this period the Reno Plant completed 31 complete overhaul jobs to the heavy equipment units, such as shovels, scrapers, compressors, tractors, etc.; 55 complete overhaul jobs to truck equipment; 41 complete overhaul jobs to passenger equipment; 53 complete overhaul jobs to survey equipment; 60 complete engine jobs; rebuilt 8 light plants; and made over 2,000 repairs and tune-ups.

The repair and overhaul work has been made under severe handicaps because of delays and in many cases inability to obtain parts, which has necessitated the rebuilding of the old part or the making of a new part in our own shops. The department was fortunate in having purchased a metallizer prior to its curtailment, and with this machine has been able to repair worn parts with metal and rebuild parts as good as new. This machine has been an especially effective tool in the salvaging of parts difficult or impossible to obtain in wartime.

The following indicates the major units in active service in the several maintenance divisions:

Division No. 1, Las Vegas	47 pieces of equipment
Division No. 2, Reno	144 pieces of equipment
Division No. 3, Elko	113 pieces of equipment
Division No. 4, Ely	120 pieces of equipment
Division No. 5, Tonopah	80 pieces of equipment

The past biennium has been one in which the Equipment Division has been mainly engaged in keeping the equipment in working condition by repairing and overhauling again and again.

DRIVERS LICENSE DIVISION

For the period July 1, 1942, to June 30, 1944, the Drivers License Division issued 18,729 original operator's licenses, 4,983 original chauffeur's licenses, 36,543 renewal operator's licenses, and 6,256 renewal chauffeur's licenses. In addition to these licenses, 1,913 duplicate licenses were issued, making a total of 68,424 licenses for the period. The magnitude of this task can be better appreciated when you consider that it takes on an average of one-half hour to issue an original license and approximately fifteen minutes to process a renewal license. This volume would require 2,507 man days of work, exclusive of travel time.

In order to handle this business with the greatest convenience for the public, and with the least expense possible, the department maintains offices in Reno, Las Vegas, and Carson City. The division Highway offices handle the business in Elko, Ely, and Tonopah. In addition to these fixed offices, an itinerary schedule is maintained which covers the remainder of the major centers of population. We wish to express our appreciation for the splendid cooperation we have received from the Army, Navy, Marine Corps, Basic Magnesium, and the State Police.

This cooperation has facilitated our work and has resulted in considerable savings to the State.

The 1943 Session of the State Legislature extended the expiration date of licenses held by members of the Armed Services until the termination of such service. Construing this Act liberally, and acting on the opinion of the Attorney-General, we have not required licenses of members of the Armed Forces stationed in this State who had valid licenses from their home States on their entrance into the Armed Service. This has resulted in considerable loss of revenue, but it has been considered just and fair, and has done much to promote good will for our State.

The 1943 Session of the Legislature amended the Chauffeur's Licensing Law by lowering the age limit for school bus operators. In order to comply with this new provision and still not let the bars down entirely in regard to the safety of school children, the department designed a special form which it required that the school boards sign before the license be issued. The purpose of this was to specifically call to the attention of the school board members that their vehicles were being operated by minors under 18 years of age in order that they might take precautionary safety measures. Our experience has been that the schools have assumed this responsibility.

Due to the manpower shortage, considerable pressure has been brought to bear upon the department to issue chauffeur's licenses to persons under 18 years of age. The department has conformed strictly to the law in these cases and could not meet the requests. There is considerable difference in granting chauffeur's licenses to school bus operators who are under 18 years of age, and granting licenses for commercial operation to this same group. This group is of school age and has become accustomed to direction by school authority. School officials through their training and experience are familiar with the safety problem and have learned to control it. Commercial operators, when pressed with a manpower shortage, are unable to exercise this same control. The young person experiencing the freedom of the work-a-day world for the first time is apt to abuse his freedom due to immaturity.

This is a matter for legislative action. We recommend, however, that action be cautiously taken in the interest of safety.

Records for a 16-month period show that 7,886 applicants failed examinations while 13,981 licenses were issued during this period. Of these 7,886 who failed, 5,602 failed the road sign test, while 2,027 failed the road rules test. Most of these applicants subsequently secured their licenses after brief periods of study.

Due to war construction projects in this State, there has been an influx of labor which has not had the advantage of formal education. In examining these applicants it is necessary for the examiner to give the applicant individual attention. This has thrown considerable additional work on the department.

A statistical study has been made of test scores of accident cases against a control group of nonaccident cases. Those involved in accidents made an average sign test score of 78 percent, and road rules test score of 78 percent, while those not involved in accidents scored 85 percent on the sign test and 85 percent on the road rules test. Both the accident and nonaccident cases averaged 85 percent on the actual driving test. From these figures it may be seen that accident proneness is a matter of a lack of knowledge of road rules and inattention to signs. A study of accident records indicates that a better knowledge of safe-driving practices, regulations, and laws would, in many cases, have prevented accidents. Reports also show that a proper attitude toward law observance and driving hazards would eliminate many accidents.

With these facts in mind, the Drivers License Division has attempted to have driver training taught in the high schools of the State as a part of the regular school curriculum. The idea has met with favorable response in most of the schools, and will be taught in several schools in the 1944–1945 school year. It is hoped in another year that all high schools will realize the need for driver training and will make provision therefor.

It has been the policy of this department to be lenient in the granting of licenses to operate motor vehicles on the public highways as long as the licensee operates his vehicle in a safe and cautious manner.

Accident records and violations are filed with each license application. In this manner a running record of each licensee is maintained. The driving record speaks for itself in cases where suspension or revocation of the driving privilege becomes necessary.

For the period July 1, 1942, to June 30, 1944, 286 licensees had their licenses revoked. 246 of these revocations were mandatory revocations for drunken driving; 14 were for making false affidavits to secure a license; and 11 were for the unlawfully taking of a motor vehicle. We call your attention to Table No. 39 in the Appendix for the balance of these revocations. A revocation under the law is for a period of one year.

For this same period, July 1, 1942, to June 30, 1944, 165 licensees had their licenses suspended for various lengths of time—74 were suspended for two or more violations; 54 for reckless driving; and 22 for false affidavits in securing a license. We call your attention to Table No. 40 in the Appendix for the balance of the causes.

The matter of suspensions and revocations is largely dependent on cooperation with the courts throughout the State. On the whole, the courts have been cooperative in reporting convictions, although there are a few who are still delinquent in this matter.

The following organizations—Junior Bar Conference of the American Bar Association, Section and Judicial Administration of the American Bar Association, National Safety Council, Automotive Safety Foundation, National Committee on Traffic Law Enforcement, Nevada State Bar Association, Nevada Department of Education, Nevada Motor Vehicle Department, Nevada Public Service Commission, Nevada State Police, and the Nevada State Highway Department recently sponsored a conference of Nevada law enforcement officials and judges to consider the problem of uniformly handling traffic violation cases. This conference should go a long way towards a satisfactory solution of the problem of revocations and suspensions.

No report of this nature is complete without comparing Nevada's accident rate with the accident rate of the country as a whole, and also a comparison of the effectiveness of the preventive measures. We call your attention to the National Safety Council statistics released on September 29, 1944. The National population death rate from motor vehicle accidents was 17.9; that for Nevada was 19.9. The death rate on a mileage basis was for the United States as a whole, 10.2; and that for Nevada was 8.4. It can be seen that Nevada's motor vehicle accident problem is now about average with the country as a whole. Motor vehicle deaths for the country as a whole for the year 1944 were up +6 percent over 1943 and were down –41 percent from 1941. Nevada's deaths were down –46 percent from 1943 and down –71 percent from 1941. These statistics show, with one exception, our rate of improvement has exceeded all the other States for the years 1941 to 1944. We wish to stress, however, our death rate on a population basis is exceeded by only four States, and these States are in the densely populated group which increases the exposure to accidents.

Respectfully submitted,

Robt A Allen

State Highway Engineer.

APPENDIX

TABLE NO. 1

STATEMENT OF RECEIPTS

Classification	1917–1942	1943	1944	Total	Percentage
Legislative appropriation	$40,000.00			$40,000.00	.05
State tax levy	1,869,468.87			1,869,468.87	2.20
Auto license fees (net)	3,056,009.87	$318,351.28	$337,817.90	3,712,179.05	4.37
Gasoline and use fuel tax (gross)	15,678,766.69	1,742,251.52	1,402,385.58	18,823,403.79	22.17
Common carrier license	2,344,087.38	388,520.25	451,407.43	3,184,015.06	3.75
Driver's license	67,614.00	18,255.75	61,393.51	147,263.26	.17
Certificate of title	44,509.05			44,509.05	.05
Racing Commission fees	147,428.86			147,428.86	.17
Contractors license	16,234.23			16,234.23	.02
Miscellaneous	886,074.27	33,948.03	44,233.66	964,255.96	1.14
State Highway bonds	1,900,000.00			1,900,000.00	2.24
Federal construction refunds	44,999,502.99	2,471,513.12	1,793,789.88	49,264,805.99	58.02
County construction refunds	4,117,285.75		800.00	4,118,085.75	4.85
County refunds on State maintenance	59,000.00			59,000.00	.07
County maintenance refunds	116,654.73			116,654.73	.14
Lincoln Highway Association construction refunds	71,426.60			71,426.60	.08
Utah-Nevada-California Association construction refunds	23,831.47			23,831.47	.03
San Francisco-Bay City construction refunds	25,000.00			25,000.00	.03
City construction refunds	212,553.41			212,553.41	.25
Railway crossing construction refunds	169,088.30			169,088.30	.20
	$75,844,536.47	$4,972,839.95	$4,091,827.96	$84,909,204.38	100.00
Advance to State by U. S. Government—Deposited to National-Industrial Recovery Highway Fund—Trust Account*	600,000.00			600,000.00	
Advance to State by U. S. Government—Deposited to Trust Account—Defense Highway Act of 1941†	600,000.00			600,000.00	
	$77,044,536.47	$4,972,839.95	$4,091,827.96	$86,109,204.38	

*This advance repaid to U. S. Government.

†$400,000 of this advance repaid to U. S. Government.

TABLE NO. 2

STATEMENT OF DISBURSEMENTS

Classification	1917–1942	1943	1944	Total	Percentage
Highway construction	$55,452,218.60	$2,670,424.67	$2,106,607.82	$60,229,251.09	72.42
Surveys, plans, rights of way, and preliminary engineering	3,189,010.11	99,602.88	86,396.91	3,375,009.90	4.06
Maintenance	10,661,704.29	745,480.25	703,340.85	12,110,525.39	14.56
County maintenance	114,846.29			114,846.29	.14
Equipment division and plants	1,582,704.03	*117,209.93*	*1,104.79*	1,464,389.31	1.76
Maintenance buildings	80,403.62	23,717.87	13,853.57	117,975.06	.14
Accounts receivable	787,357.04	42,606.01	33,544.66	863,507.71	1.04
Section "31" refunds	40,107.17			40,107.17	.05
County highway bond redemption	232,168.01			232,168.01	.28
Laboratory building	21,642.18			21,642.18	.03
General administration	1,865,376.78	132,417.94	137,213.81	2,135,008.53	2.57
Highway bulletin and publicity	59,103.55			59,103.55	.07
Road information	10,313.43	3,872.94	2,948.71	17,135.08	.02
Landscape-architect department	15,097.01			15,097.01	.02
Roadside improvement	4,241.31	2.75	284.42	4,528.48	.01
Special highway traffic count	69,693.91	10,028.96	9,736.48	89,459.35	.11
Safety division	35,103.22			35,103.22	.04
Traffic and sign department (headquarters)	20,594.61	17,214.58	5,484.55	43,293.74	.05
Sign division (Reno)	78,256.94	26,737.75	26,019.60	131,014.29	.16
Pavement striping	41,715.91	16,620.62	18,292.67	76,629.20	.09
Driver's license division	70,582.44	33,023.42	47,768.81	151,374.67	.18
Police patrol (highway)	341,623.60			341,623.60	.41
Common carrier license expense	85,905.09			85,905.09	.10
Public service commission inspectors	67,113.51	48,537.23	47,646.99	163,297.73	.20
Common carrier and truck refunds	20,697.30	814.15	37.70	21,549.15	.02
Gasoline tax refunds	722,555.99	267,276.02	169,213.73	1,159,045.74	1.39
Gasoline tax administration	29,433.23	7,186.74	8,149.44	44,769.41	.05
Use fuel tax administration	10,840.58	7,619.75	5,425.58	23,885.91	.03
	$75,710,409.75	$4,035,974.60	$3,420,861.51	$83,167,245.86	100.00
Transfer to Revolving Fund	52,452.02			52,452.02	
Transfer to U. S. Treasurer from National Industrial Recovery Highway Fund—Trust Account	600,000.00			600,000.00	
Transfer to U. S. Treasurer from Trust Account—Defense Highway Act of 1941		300,000.00	100,000.00	400,000.00	
Totals	$76,362,861.77	$4,335,974.60	$3,520,861.51	$84,219,697.88	

Italic figures denote credit.

Reconcilement—	
Total receipts	$86,109,204.38
Total disbursements	84,219,697.88
State Highway balance July 1, 1944*	$1,889,506.50
Lists filed July 5 and 20, 1944, included in disbursements	114,644.87
State Controller's balance July 1, 1944†	$2,004,151.37
State High balance (Highway Fund)*	$1,743,195.64
State Highway balance (Trust Account)	146,310.86
	$1,889,506.50
State Controller's balance (Highway Fund)†	1,824,483.87
State Controller's balance (Trust Account)	179,667.50
	$2,004,151.37

TABLE NO. 3

STATEMENT OF RECEIPTS AND DISBURSEMENTS FOR THE PERIOD JULY 1, 1942, TO JUNE 30, 1944

RECEIPTS	1943	1944	Total	Percentage
Federal aid	$2,471,513.12	$1,793,789.88	$4,265,303.00	47.05
County aid on construction	—	800.00	800.00	.01
Other aid on construction	1,000.00	—	1,000.00	.01
Miscellaneous	32,948.03	44,233.66	77,181.69	.85
Gasoline and use fuel tax (gross)	1,742,251.52	1,402,385.58	3,144,637.10	34.69
Auto license (net)	318,351.28	337,817.90	656,169.18	7.24
Common carrier license	388,520.25	451,407.43	839,927.68	9.27
Driver's license	18,255.75	61,393.51	79,649.26	.88
Totals	$4,972,839.95	$4,091,827.96	$9,064,667.91	100.00
DISBURSEMENTS				
General administration	$132,417.94	$137,213.81	$269,631.75	3.62
Special traffic surveys	10,028.96	9,736.48	19,765.44	.27
Road information	3,872.94	2,948.71	6,821.65	.09
Roadside improvement	2.75	284.42	287.17	.01
Traffic and sign department (headquarters)	17,214.58	5,484.55	22,699.13	.30
Sign department (Reno)	26,737.75	26,019.60	52,757.35	.71
Pavement striping	16,620.62	18,292.67	34,913.29	.47
Driver's license division	33,023.42	47,768.81	80,792.23	1.08
Public service commission inspectors	48,537.23	47,646.99	96,184.22	1.29
Common carrier license refunds	814.15	37.70	851.85	.01
Gasoline tax refunds	267,276.02	169,213.73	436,489.75	5.85
Gasoline tax administration	7,186.74	8,149.44	15,336.18	.21
Use fuel tax administration	7,619.75	5,425.58	13,045.33	.18
Maintenance	745,480.25	703,340.85	1,448,821.10	19.43
Surveys, plans, rights of way, etc.	99,602.88	86,396.91	185,999.79	2.49
Equipment division and plants	*117,209.93*	*1,104.79*	*118,314.72*	*1.59*
Maintenance buildings	23,717.87	13,853.57	37,571.44	.50
Highway construction	2,670,424.67	2,106,607.82	4,777,032.49	64.06
Miscellaneous	42,606.01	33,544.66	76,150.67	1.02
	$4,035,974.60	$3,420,861.51	$7,456,836.11	100.00
Transfer of Trust Account to U. S. Treasurer	300,000.00	100,000.00	400,000.00	
Totals	$4,335,974.60	$3,520,861.51	$7,856,836.11	

Italic figures denote credit.

TABLE NO. 4
FEDERAL AID ALLOTMENTS

1921 and prior	$3,527,276.18
1922	953,436.78
1923	635,624.52
1924	826,360.27
1925	947,623.25
1926	956,576.00
1927	948,318.00
1928	948,510.00
1929	957,995.00
1930 Regular	960,375.00
1930 Public lands	588,914.00
1931 Regular	1,601,408.00
1931 Unused portion Hawaii allotment	4,288.00
1931 Advance	904,961.83
1932 Regular	1,598,987.00
1932 Public lands	440,683.00
1933 Regular	1,421,688.63
1933 Emergency	1,575,756.00
1934 National recovery	5,675,875.00
1935 National recovery	2,844,481.00
1936 Regular	1,595,501.00
1936 Public lands	553,135.00
1936 Works program highway	2,243,074.00
1936 Works program grade crossing elimination	887,260.00
1937 Regular	1,593,978.00
1938 Regular	1,632,385.00
1938 Secondary highways	326,477.00
1938 Grade crossing elimination	250,000.00
1938 Public lands	560,201.00
1939 Regular	1,590,172.00
1939 Secondary highways	318,034.00
1939 Grade crossings	243,750.00
1939 Public lands	559,895.00
1940 Regular	1,275,938.00
1940 Secondary highways	191,391.00
1940 Grade crossings	97,500.00
1940 Public lands	212,442.00
1940 Regular (reapportioned from other States)	6,718.00
1940 Secondary (reapportioned from other States)	690.00
1940 Grade crossing (reapportioned from other States)	781.00
1941 Regular	1,462,071.00
1941 Secondary highways	190,705.00
1941 Grade crossings	146,250.00
1941 Public lands	218,031.00
1941 Regular (reapportioned from Georgia)	4,919.00
1941 Secondary (reapportioned from Georgia)	738.00
1941 Grade crossing (reapportioned from Georgia)	358.00
1942 Regular	1,274,718.00
1942 Secondary	223,076.00
1942 Grade crossings	97,500.00
1942 Public lands	207,128.00
1943 Regular	1,275,386.00
1943 Secondary	223,193.00
1943 Grade crossing	97,500.00
1943 Strategic net	318,847.00
1943 Advance engineering	127,539.00
	$48,326,418.46

Other Federal Funds Allotted

Access funds	$1,963,276.29
Flight strips (general)	580,669.00
Flight strips (special)	699,611.00
	$3,243,556.29
Total	$51,569,974.75

TABLE NO. 5

MAINTENANCE COSTS FROM 1918–1944

	Mileage			Mileage	
1918		$16,596.54	1932	2,113.02	$618,377.41
1919		29,330.21	1933	2,151.64	566,845.41
1920		44,323.34	1934	2,287.37	502,715.66
1921		33,601.26	1935	2,524.77	617,784.47
1922		61,997.55	1936	2,656.68	675,726.06
1923	442.98	110,724.87	1937	2,697.82	846,033.35
1924	765.23	122,788.60	1938	2,770.20	756,305.26
1925	903.90	215,168.70	1939	2,805.90	830,877.69
1926	1,213.43	306,899.52	1940	2,908.48	763,075.33
1927	1,445.08	343,399.28	1941	2,941.22	774,573.50
1928	1,680.73	359,262.08	1942	3,015.76	848,789.57
1929	1,875.16	418,065.08	1943	3,047.80	745,480.25
1930	1,905.43	500,752.46	1944	3,084.67	703,340.85
1931*	2,061.34	301,166.64			

*Seven months' expenditures, December 1, 1930, to June 30, 1931. Starting during the fiscal year 1933 and continuing through 1934, the maintenance crews worked and were paid for five days a week only.

TABLE NO. 6

SNOW REMOVAL COSTS, 1923–1944*

1923	$12,695.38	1934	$8,227.13
1924	884.53	1935	28,573.76
1925	1,479.13	1936	50,948.37
1926	1,803.43	1937	131,066.03
1927	8,228.95	1938	59,468.88
1928	3,167.50	1939	71,681.97
1929	16,172.05	1940	42,403.61
1930	19,466.28	1941	57,008.71
1931	4,711.45	1942	87,357.42
1932	83,632.96	1943	60,386.97
1933	83,497.61	1944	94,585.25

*Snow removal costs prior to 1923 not available.

TABLE NO. 7

MAINTENANCE MILEAGE AND EXPENDITURES BY ROAD TYPE

FISCAL YEAR ENDING JUNE 30, 1943

Type of road or construction	Mileage	Expenditures
Cement concrete	9.44	$7,003.51
Asphaltic concrete	40.28	27,801.46
Plantmixed bituminous-treated gravel	422.48	105,649.71
Roadmixed bituminous-treated gravel*	2,353.41	503,953.84
Gravel	85.26	13,745.56
Graded and unimproved	136.93	22,466.74
Subtotal		$680,620.82
Bridge maintenance		11,090.89
Additions and betterments†		53,768.54
Totals	3,047.80	$745,480.25

*19.85 miles and $9,484.04 miscellaneous types included.

†Comprising the following items.

Reconditioning	$16,809.03
Seal coat	32,746.63
Stock pile	4,212.88
	$53,768.54

TABLE NO. 8

MAINTENANCE COST PER MILE BY ROADTYPE, FISCAL YEAR ENDING JUNE 30, 1943

Type of surface	Mileage	Cost	Cost per mile
Cement concrete	9.44	$7,003.51	$741.85
Asphaltic concrete	40.28	27,801.46	690.02
Plantmixed bituminous-treated gravel	422.48	105,649.71	249.83
Roadmixed bituminous-treated gravel	2,333.56	494,469.80	211.89
Gravel	85.26	13,745.56	161.11
Graded and unimproved	136.93	22,466.74	164.07
Miscellaneous	19.85	9,484.04	477.77
	3,047.80	$680,620.82	

Average cost per mile $223.31.

TABLE NO. 9

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON CEMENT CONCRETE, ASPHALTIC CONCRETE AND PLANTMIX BITUMINOUS–TREATED GRAVEL ROADS, FISCAL YEAR ENDING JUNE 30, 1943.

Operation	Cement concrete	Asphaltic concrete	Plantmix
Building and repairing shoulders	$813.32	$3,056.35	$15,048.67
Filling expansion joints and cracks and patching surface	1,786.51	4,859.20	21,084.78
Cleaning ditches and culverts	246.13	5,555.75	9,479.48
Cutting weeds and brush	198.66	2,205.32	7,954.37
Dragging and blading	....	....	9,255.53
Repairing surface ditches	22.08	370.65	1,342.83
Raking rocks	....	....	93.20
Removing slides and trimming slopes	6.81	1,446.67	13,237.80
Washouts	76.91	2,700.37	7,757.86
Hauling and spreading patching material	....	....	217.44
Snow removal	195.67	1,370.62	4,840.25
Guard rail	31.66	153.35	399.30
Riprapping and protecting slopes	31.77	3.13	862.70
Removing debris and waste material along R/W	1,123.49	394.48	3,777.54
Building and repairing culverts	9.50	193.17	250.33
Building and repairing fences and gates on R/W	....	422.30	701.36
Painting traffic center line	....	....	371.89
Snow fence	90.54	1,361.94	163.18
Sand fence	....	....	448.34
Maintenance houses, A/C	508.01	1,644.91	1,379.88
New road approaches	14.35	....	35.35
Landscape	1,798.34	1,014.36	5,041.83
Flattening slopes	31.88	6.22	66.58
Sanding icy roads	11.04	229.25	1,057.05
Rental of garages, storage sheds, etc.	1.34	810.39	746.58
Parks	....	3.03	
Emergency patrol	5.50	....	35.59
	$7,003.51	$27,801.46	$105,649.71

TABLE NO. 10

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BITUMINOUS–TREATED, GRADED AND UNIMPROVED ROADS, FISCAL YEAR ENDING JUNE 30, 1943.

Operation	Bituminous treated	Gravel	Graded and unimproved
Building and repairing shoulders	$101,278.58	$75.14	$1.69
Filling expansion joints and cracks and patching surface	119,808.78	253.00	78.62
Cleaning ditches and culverts	31,217.67	1,892.53	303.57
Cutting weeds and brush	63,859.97	37.58	1,261.95
Dragging and blading	410.98	3,402.25	13,753.22
Building, repairing and cleaning surface ditches	8,550.45	....	123.06
Raking rocks	34.41	831.39	343.83
Removing slides and trimming slopes	47,048.86	2,904.45	160.79
Repairing washouts	30,699.49	427.60	776.02
Hauling and spreading patching material	119.71	1,135.92	2,431.29
Snow removal	40,632.02	2,421.04	956.23
Repairing guard rail	1,041.67		
Riprapping and protecting slopes	2,811.44	....	119.01
Removing debris and waste material along right of way	13,358.83	....	59.65
Building and repairing culverts	1,259.99	276.29	231.82
Reconditioning	156.33		
Repairing fences and gates on right of way	453.87	7.11	
Painting traffic center line	661.00		
Erecting, removing and repairing snow fence	1,727.07	....	41.45
Maintenance stations—Construction, repair, and upkeep	19,794.35	16.31	1,794.03
Seal coating	742.44		
Maintaining road approaches	182.66		
Landscape maintenance	2,882.47		
Flattening slopes	2,297.06		
Sanding icy roads	5,311.31	53.91	30.51
Rentals of garages, storage sheds, etc.	4,897.29	11.04	
Maintenance roadside parks	2,636.55		
Emergency patrolling—General maintenance	78.59		
	$503,953.84	$13,745.56	$22,466.74

TABLE NO. 11

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BRIDGES, FISCAL YEAR ENDING JUNE 30, 1943

Operation	Amount	Percent
Channel work	$4,157.99	37.5
Substructure—General repairs	2,382.63	21.5
Substructure—Painting	479.91	4.3
Superstructure—General repairs	401.82	3.6
Superstructure—Painting	1,184.62	10.8
Repairs to bridge surface	190.37	1.7
Approaches—General repairs and surfacing	512.49	4.6
Approaches—Guard rail	307.63	2.8
Supplementary maintenance, including lighting, pumping system, etc.	647.55	5.8
Emergency protection	79.29	0.7
Inspection	746.59	6.7
	$11,090.89	100.0

TABLE NO. 12

TOTAL EXPENDITURES FOR MAINTENANCE AND BETTERMENT WORK IN EACH COUNTY, FISCAL YEAR ENDING JUNE 30, 1943

	Mileage	Expenditures
Churchill	172.52	$39,393.78
Clark	337.05	107,494.90
Douglas	77.03	38,370.76
Elko	430.13	121,481.14
Esmeralda	216.83	39,770.88
Eureka	77.83	21,204.12
Humboldt	153.23	21,771.89
Lander	158.84	15,737.63
Lincoln	206.78	45,229.91
Lyon	158.04	32,889.15
Mineral	141.48	36,261.24
Nye	352.62	53,472.86
Ormsby	27.97	9,307.96
Pershing	86.36	13,988.92
Storey	9.55	7,007.77
Washoe	164.35	86,582.57
White Pine	277.19	55,514.77
	3,047.80	$745,480.25

TABLE NO. 13

MAINTENANCE MILEAGE AND EXPENDITURES BY ROAD TYPE, FISCAL YEAR ENDING JUNE 30, 1944

Type of road construction	Mileage	Expenditures
Roadmixed bituminous-treated gravel*	2,382.97	$499,917.87
Plantmixed bituminous-treated gravel	421.95	94,999.04
Graded and unimproved	136.00	17,205.42
Gravel	95.40	12,803.15
Asphaltic concrete	39.88	20,905.03
Cement concrete	8.47	9,349.89
Subtotals	3,084.67	$655,180.40
Bridge maintenance		5,132.02
Additions and betterments†		43,028.43
		$703,340.85

*18.99 miles and $4,773.10 miscellaneous types included.

†Comprising the following items:

Seal coating	$19,623.28
Seal coating and chips	1,274.03
Stock pile	2,506.55
Reconditioning	19,394.68
Resurfacing Bridge No. 200 in Esmeralda County	229.89
	$43,028.43

TABLE NO. 14

MAINTENANCE MILEAGE AND EXPENDITURES BY ROAD TYPE, FISCAL YEAR ENDING JUNE 30, 1944

Type of surface	Mileage	Cost	Cost per mile
Roadmixed bituminous-treated gravel	2,382.97	$499,917.87	$209.79
Plantmixed bituminous-treated gravel	421.95	94,999.04	225.14
Graded and unimproved	136.00	17,205.42	126.50
Gravel	95.40	12,803.15	134.20
Asphaltic concrete	39.88	20,905.03	524.61
Cement concrete	8.47	9,349.89	1,103.87
	3,084.67	$655,180.40	

Average cost per mile $212.40.

TABLE NO. 15

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON CEMENT CONCRETE, ASPHALTIC CONCRETE AND PLANTMIX BITUMINOUS-TREATED GRAVEL ROADS, FISCAL YEAR ENDING JUNE 30, 1944.

Operation	Cement concrete	Asphaltic concrete	Plantmix
Building and repairing shoulders	$3,292.48	$3,320.94	$10,447.01
Filling expansion joints and cracks and patching surface	1,961.63	3,203.12	19,964.89
Cleaning ditches and culverts	125.05	1,563.91	6,954.95
Cutting weeds and brush	291.95	2,842.62	13,131.72
Dragging and blading	....	....	86.57
Repairing and cleaning ditches	10.57	*301.91*	866.71
Raking rocks	....	....	23.11
Signs and markers	....	....	15.81
Removing slides and trimming slopes	408.13	863.67	6,321.43
Repairing washouts	34.57	2,400.37	4,403.72
Hauling and spreading patching material	....	....	55.68
Removing snow	133.34	2,127.06	12,727.84
Repairing guard rail	84.57	479.91	306.97
Riprapping and protecting slopes	87.80	266.83	742.46
Removing debris and waste material along right of way	143.99	436.37	3,161.64
Repairing culverts	....	220.65	103.71
Reconditioning	....	196.80	8.26
Repairing fences and gates on right of way	66.23	255.51	594.83
Painting traffic centerline	....	....	34.08
Erecting, removing, and repairing snow fence	.35	....	343.21
Sand fence	5.43		
Maintenance stations upkeep	152.49	1,228.81	1,086.40
Repairing road approaches	7.89	104.01	1,450.38
Landscape maintenance	2,089.68	625.48	3,808.84
Sanding icy roads	57.38	776.20	5,145.12
Seal coating	1.93	....	2,344.18
Rental of garages, storage sheds, etc.	210.31	278.41	869.50
Maintenance roadside parks	184.10	16.26	
Totals	$9,349.89	$20,905.03	$94,999.04

Italic figures denote credit.

TABLE NO. 16

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BITUMINOUS–TREATED, GRADED AND UNIMPROVED ROADS, FISCAL YEAR ENDING JUNE 30, 1944.

Operation	Bituminous treated	Gravel	Graded and unimproved
Building and repairing shoulders	$88,373.50	$190.62	$185.81
Filling expansion joints and cracks and patching surface	126,673.89	377.92	40.11
Cleaning ditches and culverts	26,158.34	1,231.16	891.95
Cutting weeds and brush	71,059.47	290.85	556.11
Dragging and blading	475.74	4,010.79	8,756.90
Repairing and cleaning surface ditches	6,863.56	77.10	110.07
Raking rocks	279.94	74.03	241.65
Erecting and repairing signs and markers	51.13		
Removing slides and trimming slopes	39,029.02	2,466.04	64.58
Repairing washouts	13,008.04	78.36	686.80
Hauling and spreading patching material	*40.04*	976.02	1,003.84
Snow removal	69,548.00	2,586.19	1,536.50
Repairing guard rail	2,662.59		
Riprapping and protecting slopes	3,517.91		
Removing debris and waste material along right of way	10,888.72	7.82	131.61
Repairing culverts	1,116.60	71.05	
Reconditioning	275.37	241.57	
Repairing fences and gates on right of way	717.20	44.77	
Painting traffic centerline	32.91		
Erecting, removing, repairing snow fence	673.57	....	19.59
Sand fence	52.40		
Maintenance stations upkeep	16,854.30	16.32	2,896.92
Seal coating	4,039.23		
Maintaining road approaches	859.61	....	82.98
Landscape maintenance	2,063.74		
Flattening slopes	54.02		
Sanding icy roads	8,968.67	22.13	
Rentals of garages, storage sheds, etc.	3,666.19	40.41	
Maintenance roadside parks	1,994.25		
Totals	$499,917.87	$12,803.15	$17,205.42

Italic figures denote credit.

TABLE NO. 17

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BRIDGES, FISCAL YEAR ENDING JUNE 30, 1944

Operation	Amount	Percent
Channel work	$1,505.76	29.3
Substructure—General repairs	240.27	4.7
Substructure—Painting	18.88	.3
Superstructure—General repairs	906.05	17.7
Superstructure—Painting	143.95	2.9
Repairs to bridge surface	326.80	6.4
Approaches—General repairs and surfacing	103.89	2.0
Approaches—Guard rail	393.76	7.7
Supplementary maintenance, including lighting, pumping system, etc.	975.77	19.0
Inspection	517.49	10.0
	$5,132.02	100.0

TABLE NO. 18

TOTAL EXPENDITURES FOR MAINTENANCE AND BETTERMENT WORK IN EACH COUNTY, FISCAL YEAR ENDING JUNE 30, 1944

County	Mileage	Expenditures
Churchill	187.92	$36,971.14
Clark	339.48	86,627.57
Douglas	77.03	32,668.89
Elko	428.22	102,035.63
Esmeralda	215.88	37,947.18
Eureka	77.83	22,793.54
Humboldt	153.23	24,300.36
Lander	166.18	22,383.38
Lincoln	206.78	36,989.57
Lyon	158.04	28,444.49
Mineral	141.48	25,817.76
Nye	367.58	61,813.22
Ormsby	27.97	10,736.71
Pershing	86.36	7,324.74
Storey	9.55	8,755.83
Washoe	164.35	96,994.66
White Pine	276.79	60,736.18
Totals	3,084.67	$703,340.85

The total mileage includes improved and unimproved types of road and the total cost includes all direct and indirect charges to maintenance.

TABLE NO. 19

CONTRACTS AWARDED BY STATE JULY 1, 1942, TO JUNE 30, 1943

Contract No.	County	Length miles	Type construction	Termini	Construction cost
641	Washoe	4.47	Plantmix	Verdi to Lawtons	$93,641.48
642	Lincoln	6.31	Roadmix (only)	Jct. U. S. 93 to Prince mine	21,824.27
643	Washoe	7.00	Plantmix	Reno to Reno Air Base	125,356.45
644	Elko		Plantmix	Graded and surfaced area west of Owyhee	362,001.70
645	Lincoln		Plantmix	Graded and surfaced area 21 miles west of Caliente	205,264.61
646	Washoe	7.71	Plantmix	Reno Air Base to Nevada-California State line	225,954.25
647	Elko	0.08	Bridge	Northfork bridge and approaches	46,577.37

CONTRACTS AWARDED BY STATE JULY 1, 1943, TO JUNE 30, 1944

Contract No.	County	Length miles	Type construction	Termini	Construction cost
648	Lyon		Plantmix	Graded and surfaced area at junction U. S. Alternate 95 and 50	$280,827.74
649	Lander		Plantmix	Graded and surfaced area 5 miles east of Battle Mountain	348,147.55
650	Nye	20.0	Roadmix (only)	Jct. U. S. 6 to Tonopah bombing range	41,930.06
651	Clark		Concrete	Pedestrian underpass near BMI plant	10,313.35
652	Clark	4.30	Plantmix	Jct. U. S. 95 Bonanza road to Jct. U. S. 93	128,963.37
653	Elko	9.82	Plantmix	6 miles east of Elko to one-half mile east Northfork bridge	67,606.61
654	Clark	0.43	Concrete and steel bridge	Between Junction Route 6 and Overton	26,287.35

TABLE NO. 20

TABLE SHOWING PROGRESS STATUS OF FEDERAL AID HIGHWAY SYSTEM, STATE HIGHWAYS NOT ON FEDERAL AID SYSTEM, AND ENTIRE HIGHWAY SYSTEM AS OF JUNE 30, 1944. THE CLOSE OF THE BIENNIUM

	Federal Aid System			Remaining State Highway System			Entire System		
County	Completed	Unimproved	Total	Completed	Unimproved	Total	Completed	Unimproved	Total
Churchill	125.72		125.72	66.94	38.39	105.33	192.66	38.39	231.05
Clark	215.81		215.81	157.81	192.78	350.59	373.62	192.78	566.40
Douglas	59.99		59.99	12.30	17.03	29.33	72.29	17.03	89.32
Elko	331.78		331.78	78.90	329.34	408.24	410.68	329.34	740.02
Esmeralda	97.22		97.22	87.56	63.50	151.06	184.78	63.50	248.28
Eureka	71.62		71.62	5.48	224.00	229.48	77.10	224.00	301.10
Humboldt	135.29		135.29	22.77	212.81	235.58	158.06	212.81	370.87
Lander	105.65		105.65	59.77	135.19	194.96	165.42	135.19	300.61
Lincoln	79.01		79.01	79.01	161.09	240.10	158.02	161.09	319.11
Lyon	107.61		107.61	50.34	73.21	123.55	157.95	73.21	231.16
Mineral	109.11	21.88	130.99	35.07	48.65	83.72	144.18	70.53	214.71
Nye	133.45		133.45	214.19	364.48	578.67	347.64	364.48	712.12
Ormsby	20.66		20.66	7.32	2.87	10.19	27.98	2.87	30.85
Pershing	75.04		75.04	11.80	170.14	181.94	86.84	170.14	256.98
Storey	9.55		9.55	3.10	24.48	27.58	12.65	24.48	37.13
Washoe	96.75		96.75	98.86	286.36	385.22	195.61	286.36	481.97
White Pine	248.63	21.20	269.83	18.60	110.45	129.05	267.23	131.65	398.88
Totals	2,022.89	43.08	2,065.97	1,009.82	2,454.77	3,464.59	3,032.71	2,497.85	5,530.56

TABLE NO. 21

STATUS OF MILEAGE ON DESIGNATED STATE HIGHWAY SYSTEM BY TYPES

Type	As of June 30, 1942	As of June 30, 1944
Unimproved*	2,459.61	2,428.05
Graded and drained	46.60	46.60
Total unsurfaced	2,506.21	2,474.65
Crushed gravel or stone	146.69	130.24
Roadmix asphaltic surface	2,459.62	2,445.21
Plantmix asphaltic surface	333.84	410.10
Asphaltic concrete	42.15	42.15
Portland cement concrete	7.27	7.22
Miscellaneous	21.39	20.99
Total surfaced	3,010.96	3,055.91
Grand total†	5,517.17	5,530.56

*Includes estimated mileage over designated routes where no roads exist.
†Increase due to revision of logged mileage on unimproved routes.

TABLE NO. 22

SURVEYS JULY 1, 1942, TO JUNE 30, 1944

County	Miles
Churchill	26.08
Clark	4.31
Elko	17.18
Esmeralda	1.00
Eureka	2.31
Humboldt	1.52
Lyon	11.68
Total	*64.08

Cost per mile of surveys, July 1, 1942, to June 30, 1944........$379.63.
*Total mileage includes feeder-road surveys.

TABLE NO. 23

PLANS COMPLETED, JULY 1, 1942, TO JUNE 30, 1944

County	Construction and reconstruction (miles)	Bituminous surface only (miles)	Bridges (number)	Other projects (number)
Clark	37.221	....	3	1
Douglas	....	....	1	
Elko	9.815	....	3	1
Eureka	13.680			
Humboldt	11.420	....	1	
Lander	18.950	....	....	1
Lincoln	....	....	....	1
Lyon	....	....	1	1
Nye	....	20.000		
Pershing	11.570			
Washoe	8.414	14.300		
	*111.070	34.300	9	†5

Total cost, plans and estimates, roadway and bridges.... ‡$66,860.10
Cost per mile........ 464.31

*Exclusive of access roads and flight strips.
†Other projects consist of one pedestrian underpass and four flight strips.
‡Exclusive of access roads and flight strips.

TABLE NO. 24
DESCRIPTION OF FEDERAL AID ROUTES, JUNE 30, 1944

F. A. Road No.	Termini	Mileage
1	From the California-Nevada State line near Verdi via Reno, Fernley, Lovelock, Winnemucca, Battle Mountain, Elko, and Wells, to the Nevada-Utah State line at Wendover, Utah, with spur to Railroad Street in Carlin	417.754
2	From a junction with Federal Aid Road No. 1 approximately 1 mile east of Fernley, via Hazen, Fallon, Austin, Eureka, Ely, and Pioche to Caliente	421.320
3	From the south town limits of Goldfield, via Tonopah, Hawthorne, Yerington, Minden, Carson City, and Reno to the Nevada-California State line near Purdy; and from the California-Nevada State line near Topaz (California), to a junction with the foregoing section approximately 1 mile southeast of Holbrook	309.813
4	From the California-Nevada State line near Bijou (California), to a junction with Federal Aid Road No. 3, approximately 3 miles south of Carson City; and from a junction with Federal Aid Road No. 3 in Carson City via Dayton to a junction with Federal Aid Road No. 2 near Leeteville	75.710
5	From the California-Nevada State line south of Jean to Las Vegas; Las Vegas to the Nevada-Arizona State line near Mesquite; with a spur to Bunkerville	42.714
6	From a junction with Federal Aid Road No. 1 in Winnemucca via Orovada to the Nevada-Oregon State line near McDermitt	73.923
7	From a junction with Federal Aid Road No. 2 near the east city limits of Ely via McGill to a junction with Federal Aid Road No. 1 near Wendover, Utah	118.241
8	From a junction with Federal Aid Road No. 4 near Mound House via Virginia City to a junction with Federal Aid Road No. 3, approximately 10 miles south of Reno	22.272
9	From a junction with Federal Aid Road No. 1, near the east city limits of Wells, via Contact to the Nevada-Idaho State line en route to Twin Falls, Idaho	67.732
10	From a junction with Federal Aid Road No. 7 approximately 4 miles south of the White Pine-Elko County line to a junction with Federal Aid Road No. 1, near the east city limits of Wells	78.883
11	From a junction with Federal Aid Road No. 5 in Las Vegas, via Boulder City to the Nevada-Arizona State line at Boulder Dam	31.172
12	From the California-Nevada State line near Benton, California, via Basalt, to a junction with Federal Aid Road No. 3 near Rhodes	34.185
13	From a junction with Federal Aid Road No. 12 near Basalt to a junction with Federal Aid Road No. 3 near Coaldale	22.332
14	From a junction with Federal Aid Road No. 3 in Tonopah, via Warm Springs and Currant, to a junction with Federal Aid Road No. 2 in Ely	167.676
15	From the California-Nevada State line south of Searchlight to a junction with Federal Aid Road No. 11 at Railroad Pass	56.335
16	From a junction with Federal Aid Road No. 2 at the east foot of Connor's Pass southeast of Ely, via Sacramento Pass, to the Nevada-Utah State line en route to Delta, Utah	37.001
17	From a junction with Federal Aid Road No. 3, near the south city limits of Reno, via Wells and Alameda Avenues, to a junction with Federal Aid Road No. 1 at Fourth Street in Reno	1.745
Total		2,064.093

SUMMARY FEDERAL AID SYSTEM
Mileage by Types as of June 30, 1944

Types	Mileage
Unimproved	38.586
Gravel or stone	0.987
Mixed bituminous	1,945.492
Bituminous penetration	20.752
Bituminous concrete	39.480
Portland cement concrete	7.341
Dual-bituminous and cement concrete	11.455
Total	2,064.093

TABLE NO. 25

CONSTRUCTION AUTHORIZATION AND DAY LABOR PROJECTS, JULY 1, 1942, TO JUNE 30, 1944

Construction authorization No.	Day labor No.	Length miles	County	Type construction	Location	Construction cost
651A			Washoe	Addition to Reno Plant Office—New lavatory	Reno Equipment Yards	$1,332.95
652			Lincoln	Construction Pioche maintenance garage	Pioche	4,895.00
653A			Nye	Fence, maintenance house, garage, and shed	Currant Maintenance Sta.	5,545.50
654			Washoe	Fence material	Reno Equipment Yards	634.91
655	231	2.8	Elko	Grading and select material surface	0.1 mile south Patsville to Mountain City	9,090.40
656	232	17.4	Lander	Construction defense access road	Battle Mountain to Copper Canyon	26,133.00
657A	233	20.0	Nye	Roadmix bituminous surface	Jct. U. S. 6, 5 miles east Tonopah Bombing Range to north boundary of the Bombing Range	27,500.00
658	234	33.0	Nye, Mineral, Churchill	Grading and bituminous penetration surface	Brucite to Jct. U. S. 50 near Westgate	77,353.10
659	235	13.3	Elko	Grading, reshaping and pit-run gravel surface	Jct U.S. 50 to Victoria mine	25,830.00
660	236	4.8	Humboldt	Grading and pit-run gravel surface	Jct. U. S. 40 to Rose Creek mine	15,801.00
661	237	6.0	Pershing	Grading and pit-run gravel surface	Jct. S. R. 59 to Long Tungsten mine	12,500.00
662	238		Washoe	Construction of cattle guard	Near Lyons Ranch S. R. 17 Virginia City Road	300.00
663			Mineral	Purchase of water rights and pipe line	From Esmeralda Water Co. at Basalt	4,000.00
664	239	0.2	Nye	Grading and roadmix bituminous surface	New intersection at Brucite	5,470.00
665	240	19.1	Lander, Humboldt	Blade and shape roadway pit-run gravel surface	Jct. U. S. 40 at Valmy to Black Rock mine	20,671.00
666	241	5.6	Clark	Providing engineer supervision 3 Kids mine road	Jct. U. S. 93 to 3 Kids mine	17,138.00
667	242	0.36	Elko	Construct detour bridge, demolish old one	Northfork bridge	9,515.00
668	243		White Pine	Purchase building in Ruth, move and remodel	Moved to Geyser Maintenance Station	2,500.00
669		12.5	Clark	Traffic stripe, signs, flashing light signals	Las Vegas Basic Magnesium plant	3,833.50
670	244		Washoe	Repairs to Bridge No. C-253	Reno-Pyramid Lake road	800.00
671	245	10.0	Mineral, Nye	Seal and blotter sand	Brucite to 10 miles southeasterly	2,838.66
672	246	6.9	Washoe	Seal and screenings, and prime shoulders	Reno to Reno Army Air Base	5,323.30
673	247		Clark	Advance engineering study	In Las Vegas, 5th St. to 3400 feet north of city limits and Charleston Blvd.	22,000.00
674	248		Washoe	Advance engineering study	1 mile west of Reno via 5th St. to Sparks	20,872.00

TABLE No. 25—*Continued*

Construction authorization No.	Day labor No.	Length miles	County	Type construction	Location	Construction cost
675	249		Churchill	Demolish green lantern and repair	Maintenance Garage, Fallon	$5,000.00
676			Clark	Constructing footpaths	BMI Plant to Pittman	1,374.50
677	250	6.7	Lander	Construction of access road	Jct. DA-RM 7 Copper Canyon to Trinity and Buena Vista mine	13,525.00
678	251	0.13	White Pine	Reconditioning roadmix surface	Through city of McGill	1,374.66
679	252	1.4	Humboldt	Survey, plans, estimates, and specifications	Jct. U. S. 40, 5 miles Winnemucca to Winnemucca Airport (Navy)	700.00
679A	252	1.4	Humboldt	Revised to include construction	Jct. U. S. 40, 5 miles Winnemucca to Winnemucca Airport (Navy)	15,000.00
680	253		Lander	Survey, plans, estimates, and specifications	Flight strip 5½ miles east of Battle Mountain	5,000.00
681	254		Lyon	Survey, plans, estimates, and specifications	Flight strip Lahonton Jct.	5,000.00
682	255		Clark	Preliminary survey	Charleston Blvd., Las Vegas	
683	256		Elko	Cattle guard	State Rt. 46 near east city limits, Elko	750.00
684	257	1.25	White Pine	Access road, blading, shaping, and construction	Jct. U. S. 50 to Black Devil mine	1,750.00
685	258	5.0	Mineral	Grading, widen, realign, reconstruct select material	Jct. County Road, Deadman Point to Northern Lights mine	7,010.00
686A	259	10.8	Elko	Grading and drainage access road gravel	Jct. State Rt. 11 to USA-USC lead and zinc mine	23,250.00
687A	260	3.0	Esmeralda	Blade and shape existing road	Jct. U. S. 6, 1 mile west Coaldale to Coaldale coal field	700.00
688	261	24.0	Pershing	Maintenance of access road	Imlay to Greenan-Kerr mine	700.00
689	262	1.5	Elko	Plans and estimate for access road	Jct. State Rt. 11 to Nevada Zinc Corp. mine	50.00
690	263		Elko	Timber bridge over creek	Tributary of Owyhee river at Patsville	832.30
691	264		Elko	Widening and deepening overflow channel	Under S. P. overpass at Deeth	910.00
692A	265		Lincoln	Post construction and maintenance	Delamar flight strip	2,500.00
693	266		Lincoln	Replacing timber deck Br. 219	Half mile west Caliente over Meadow Valley Wash	2,200.00
694	267	1.4	Humboldt	Mine access road, gravel surface	Getchell mine road to Valley View Tungsten mine	3,800.00
695	268	7.1	Eureka-Elko	Mine access road	Jct. State Rt. 20, 9 miles south Palisade to Grey Eagle mine	7,212.00
696	269	2.6	Lincoln	Mine and mill access road, gravel surface	Jct. Prince mine road to Prince mine and Castleton mill	8,900.00

697	270		Elko	Post construction and maintenance	Owyhee flight strip	2,500.00
698	271		Lander	Extension of drainage system	Through Battle Mountain	797.00
699	272		Humboldt	Construct sidewalk on State Route 8	Frisco to First St. in Winnemucca	734.55
700	273		Elko	Removing dam and widen channel	Humboldt River in Elko	1,200.00
701	274	6.1	Pershing	Mine access road	County road to Segerstrom-Heizer mine	9,336.50
702	275	6.0	Nye	Widening cuts and fills, State Route	Tonopah to Tonopah Air Base	2,009.00
703	276	1.8	Lander	Access road to Radio Range Control Building	Battle Mountain flight strip	4,000.00
704	277	7.4	Pershing	Blade and shape roadway, gravel surface	Imlay to 7 miles north to Greenan-Kerr mine	32,400.00
705	278	4.0	Nye	Blade and shape access road	1 mile south Beatty to Crowell Flourspar mine	6,000.00
706	279		Elko	Cattle guard	On U. S. 93, 14 miles north Wells	994.52
707A	280	20.4	Eureka	Access road, blade, shape, gravel surface	Mt. Hope Zinc mine to Palisade	60,000.00
708	281	6.25	Clark	Asphaltic seal coat and screenings	Las Vegas to McCarran Field	7,228.00
709	282	3.0	White Pine	Grade and shape existing road	To Grand Deposit mine 40 miles north of Ely	3,700.00
710	283		Lander	Post construction, maintenance, snow removal	Battle Mountain flight strip	5,000.00
711	284		Lyon	Post construction, maintenance, snow removal	Churchill (Lahonton) flight strip	5,000.00
712A	285		State-wide	Surveys, plans, estimates, and specifications	Postwar Planning in State	521,500.00
713	286		Churchill, Washoe	Advance engineering studies	1 mile west Wadsworth to 3 miles northeast Fernley	8,360.00
714	287		Elko	Advance engineering studies	West limits of Elko to 1 mile north of north limits of Elko	4,950.00
715	288		Churchill	Advance engineering studies	On U. S. 50 in Fallon to 8 miles east	10,450.00
716	289	17.0	Clark	Asphaltic seal coat and screenings	U. S. 93, 4 miles southeast Las Vegas to one-half mile west Boulder City	11,992.00
717	290		Clark	Recondition shoulders and plantmix 8 feet wide	Clark Avenue underpass to 1650 feet north of city limits, Las Vegas	5,033.00
718	291		Lyon	Install 80 feet 36-inch C. M. pipe	1½ miles south Wabuska	750.00
719			Washoe	Gasoline Island and Building	Reno equipment shops	5,500.00
720	292		Clark	Advance engineering studies	U. S. 93, Mormon Mesa to Nevada-Utah line	41,800.00
721			Nye	Extension of telephone toll line	To Lathrop Wells maintenance building	482.09
722			Nye	Extension of telephone toll line	To Beatty maintenance bldg.	482.09
723			Esmeralda	Extension of telephone toll line	To Basalt maintenance bldg.	482.10
724			Elko	Installing bathroom	Currie maintenance station	500.00
725			Clark	Purchase lots, fence, and garage	At Searchlight	4,120.00
726			Nye	Extension of telephone toll line	At Sacrabatus	482.09

TABLE No. 25—*Continued*

Construction authorization No.	Day labor No.	Length miles	County	Type construction	Location	Construction cost
727	294		Washoe	Sewage facilities, toilet and wash bowl	Scale house on U. S. 40, west of Reno	$341.00
728	295	17.05	Nye, Esmeralda	Seal coat and screenings	Tonopah to Tonopah Air Base, 6.25 miles Tonopah to 10 miles south, 10 miles Through Goldfield, 0.80 miles	10,375.00
729	296		White Pine	Installing 144 lin. ft. reinforced concrete pipe	Through overpass on Ruth feeder	840.00
730	297		Washoe	1½-inch Class F2 plantmix added	California-Nevada line to Wadsworth (portion)	32,700.00
731	298	3.0	Nye	Reconditioning roadmix	Gabbs Valley to Jct. U. S. 50	6,360.00
732	299	2.0	Elko	Reconditioning with Class F2 plantmix	Industrial School to 2 miles east	2,090.00
733	300	15.4	Clark	Preliminary survey, plans and specifications	Access road to Blue Diamond mine	500.00
734	301	50.5	Elko	Recondition various roads in county	On U. S. 40, 93, 95, State Rt. 11, 43, 8BA, 21B	30,100.00
735			Washoe	Painting building	Reno equipment shop	2,539.50

TABLE NO. 26
ACCESS ROAD CONSTRUCTION

Day labor No.	County	Location	Type construction	Length miles	Construction cost
231	Elko	0.1 mile south Patsville to Mountain City	Grade, select material surface	2.8	$8,362.67
232	Lander	Battle Mountain to Copper Canyon	Grade, select material surface	17.4	20,478.60
233	Nye	5 miles east Tonopah to Bombing Range	Roadmix bituminous surface	20.0	27,000.69
234	Nye, Mineral, Churchill	Brucite to U. S. 50 at Westgate	Grading, oil penetration	33.0	132,974.95
235	Elko	Jct. U. S. 50 to Victoria mine	Grading, gravel	13.3	16,077.10
236	Humboldt	Jct. U. S. 40 to Rose Creek mine	Grading, gravel	4.8	8,394.07
237	Pershing	Jct. State Rt. 59 to Long Tungsten mine	Grading, gravel	6.0	12,439.49
240	Lander-Humboldt	Jct. 40 at Valmy to Black Rock mine	Blade, reshape, gravel	19.1	17,952.60
250	Lander	Copper Canyon Road to Trinity and Buena Vista mine	Grade and gravel	6.7	8,305.65
252	Humboldt	5 miles east Winnemucca to Winnemucca Airport	Grade and gravel	1.4	13,484.03
257	White Pine	Jct. U. S. 50 to Black Devil mine	Blade and shape	1.25	1,327.93
258	Mineral	Deadman's Point to Northern Lights mine	Grade, select material surface	5.00	5,727.37
259	Elko	State Rt. 11 to USA-USC Lead and Zinc mine	Grade and gravel	10.8	13,411.28
260	Esmeralda	1 mile west Coaldale to Coaldale cold field	Blade and shape	3.0	700.00
267	Humboldt	Getchell Mine Road to Valley View Tungsten mine	Grade and gravel	1.4	3,381.65
268	Eureka-Elko	9 miles south Palisade to Grey Eagle mine	Grade and gravel	7.1	6,711.89
269	Lincoln	Prince Mine Road to Castleton mill	Grade and gravel	2.6	5,908.59
274	Pershing	County Road to Segerstrom-Heizer mine	Grade and gravel	6.1	5,157.71
275	Nye	Tonopah to Tonopah Air Base	Widen cuts and fills	6.0	2,009.00
276	Lander	Range Control Road Battle Mountain Flight Strip	Grade and gravel	1.8	3,628.83
277	Pershing	Imlay to 7 miles north (Greenan-Kerr mine)	Blade, shape, gravel	7.4	14,977.86
278	Nye	1 mile south Beatty to Crowell Flourspar mine	Blade and shape	4.0	8,179.89
280	Eureka	Palisade to Mt. Hope Zinc mine	Blade, shape, gravel	61.0	13,695.13
282	White Pine	To Grand Deposit mine 40 miles north of Ely	Blade and shape	3.0	1,366.53
			Totals	244.95	$351,653.51

Table does not include access roads built under contract.

TABLE NO. 27

TOTAL ACRES OF LAND ACQUIRED FOR HIGHWAY RIGHT OF WAY TO JUNE 30, 1944

Route	Acres		Total private and Government (Acres)	Total cost through private land	Cost Per Acre	
	Private	Government			Private	All land
1	6,503.92	8,707.57	15,211.49	$105,804.04	$16.27	$7.01
1A	111.99	1,309.91	1,421.90	100.00		
1B	744.71	554.71	1,299.42	2,949.70	3.96	2.27
2	843.38	11,649.30	12,492.68	25,978.88	30.80	2.08
2A	525.09	1,704.95	2,230.04	1,415.54		
2B	128.46	442.36	570.82	380.00		
3	1,390.64	5,918.92	7,309.56	69,349.72	49.87	9.49
3A	89.69	1,095.24	1,184.93			
4	240.67	7,299.44	7,540.11	156.00		
5	3,411.65	10,930.57	14,342.22	26,905.69	7.88	1.87
6	393.34	6,390.49	6,783.83	9,145.43	23.25	1.35
7	654.83	10,014.54	10,669.37	5,167.69		
8	277.21	2,913.02	3,190.23	1,305.03	4.71	.41
8A	173.98	4,225.21	4,399.19	1,836.99		
8B	88.23	531.34	619.57			
9	193.02	144.82	337.84	7,845.20		
10	11.29	541.30	552.59	100.00		
11	144.95	477.02	621.97	786.64		
11A	11.92	----------	11.92			
12	79.11	189.36	268.47			
13	398.83	5,572.57	5,971.40	1,077.27		
14	36.44	881.24	917.68	255.42		
15	7.20	1,051.28	1,058.48			
17	225.44	414.61	640.05	7,926.00		
18A	38.68	143.19	181.87	20.00	0.52	0.014
19	23.14	9.83	32.97			
21	52.66	----------	52.66	116.00		
21B	15.67	----------	15.67			
23	19.38	1,555.85	1,575.23			
24	4.79	6,107.08	6,111.87			
26	----------	133.15	133.15			
27	30.47	----------	30.47	950.00		
29	----------	802.51	802.51			
32	17.60	----------	17.60			
33	270.82	370.64	641.46	212.90		
36	12.23	----------	12.23			
37	76.60	----------	76.60	1,367.00		
38	43.50	301.66	345.16	820.00		
41	13.86	217.30	231.16			
43	407.18	602.03	1,009.21	940.00		
44	81.66	120.90	202.56			
46	62.91	93.71	156.62	140.00	2.23	.89
47	.50	971.40	971.90			
48	14.34	----------	14.34			
53	6.94	322.37	329.31			
58	----------	597.05	597.05			
59	11.92	----------	11.92			
60	----------	544.47	544.47			
61	12.79	----------	12.79			
62	15.21	----------	15.21			
65	5.606	----------	5.606			
67	.67	----------	.67			
69	----------	244.17	244.17			
Feeder	102.29	259.28	361.57	1,670.00	57.80	4.69
Total	18,027.41	96,356.36	114,383.77	$274,721.14		
Average cost per acre					$15.24	$2.40

TABLE NO. 28

RIGHT OF WAY ACQUIRED—STATE HIGHWAYS

JULY 1, 1942, TO JUNE 30, 1944

Route	Acres		Total private and Government (Acres)	Total cost through private land	Cost Per Acre	
	Private	Government			Private	All land
1	96.96	11.873	108.833	$392.00	$4.04	$3.60
2	.15	----------	0.150			
3	.319	----------	.319			
5	30.100	283.974	314.074			
6	27.550	695.568	723.118			
8A	1.620	----------	1.620			
9	51.670	----------	51.670			
18A	38.684	143.185	181.869	20.00	0.52	0.01396
41	13.860	217.304	231.164			
65	5.606	----------	5.606			
Total	266.519	1351.904	1618.423	$412.00		
Average cost per acre					$2.47	$0.25

RIGHT OF WAY ACQUIRED FOR FEEDER ROADS
JULY 1, 1942, TO JUNE 30, 1944

County	Location	Acres	Cost
Clark	Charleston Boulevard	28.891	$1,670.00
Clark	Sheep Mountain Target Range	27.900	
Totals		56.791	$1,670.00

MAINTENANCE SITES ACQUIRED, JULY 1, 1942, TO JUNE 30, 1944

County	Location	Acres	Cost
Washoe	Reno Plant	10.030	
Totals		10.030	

RIGHT OF WAY ACQUIRED FOR FLIGHT STRIPS
JULY 1, 1942, TO JUNE 30, 1944

County	Location	Acres	Cost
Lander	2½ miles east of Battle Mountain	398.120	$540.00
Churchill	Lahontan	340.220	395.00
Lincoln	Delamar	1,190.00	
Elko	Owyhee	231.75	
Totals		2,160.090	$935.00

TABLE NO. 29

CONSTRUCTION AND RECONSTRUCTION COMPLETED AND UNDER CONSTRUCTION ON THE DESIGNATED STATE HIGHWAY SYSTEM AT THE CLOSE OF THE BIENNIUM.

Type	Miles new construction completed during biennium	Miles reconstruction completed during biennium	Miles new highway under construction at close of biennium	Miles reconstruction not yet completed at close of biennium	Totals
Roadmix surface	26.31	--------	4.30	0.43	31.04
Plantmix surface	--------	19.26	--------	9.82	29.08
Totals	26.31	19.26	4.30	10.25	60.12

BRIDGE AND GRADE SEPARATION SUMMARY
Structures Built by State Highway Department

Type	Completed or under construction as of June 30, 1942	Completed during biennium or under construction at close of biennium June 30, 1944	Structures abandoned during biennium	Total as of June 30, 1944	Structures on State highway system not built by State Highway Department	Total structures as of June 30, 1944
Plain concrete	4	0	0	4	1	5
Reinforced concrete	67	4	2	69	3	72
Structural steel	27	0	0	27	10	37
Timber	60	0	2	58	25	83
Composite structures (reinenforced concrete and structural steel)	11	0	0	11	0	11
Totals	169	4	4	169	39	208
Total length of structures in feet	15,396	386	223	15,559	2,903	18,462

TABLE NO. 30

COMPARISON OF AVERAGE DAILY TRAFFIC AT AUTOMATIC RECORDERS FOR SIX FISCAL YEAR PERIODS

		Daily Average					
Station	Location	1938–1939	1939–1940	1940–1941	1941–1942	1942–1943	1943–1944
101	U. S. 40, East of Sparks	1,427	1,410	1,451	1,523	1,223	967
102A	U. S. 91, South of Las Vegas	1,408	1,758	2,471	....	1,226	915
103	State Route 46, South of Elko	282	280	268	223	148	116
104	U. S. 395, North of Carson City	....	....	1,557	1,342	861	668
106	State Route 59, South of Lovelock	208	257	189	186	206	202
107	U. S. 40, East of Elko	745	856	870	844	649	554
108	U. S. 50, North of McGill	361	412	469	539	319	224
109	U. S. 93, South of East Ely	384	434	503	438	296	270
110	U. S. 93, Southeast of Las Vegas	1,481	1,699	1,979	4,898	7,528	3,821
112	U. S. 6, West of Tonopah	394	395	410	469	411	384
114	U. S. 95, Northwest of Las Vegas	....	247	255	320	321	342
115	U. S. 40 and 50 at Wendover	....	....	665	783	814	
116	U. S. 40, West of Verdi	....	....	1,371	1,422	1,073	811
Totals		6,690	7,748	12,458	12,987	15,075	9,274
Percentage increase or decrease from previous year			+12.1[1]	+14.4[2]	+30.0[3]	+6.6[3]	—35.0[4]

[1] Excludes Recorders 104, 114, 115, and 116.

[2] Excludes Recorders 104, 115, and 116.

[3] Excludes Recorder 102.

[4] Excludes Recorder 115.

TABLE NO. 31

MILEAGE OF RURAL ROADS IN EACH SURFACE WIDTH GROUP BY AVERAGE DAILY TRAFFIC VOLUME GROUPS NEVADA FEDERAL AID SYSTEM, DECEMBER 31, 1943

	SURFACE TYPE								
Average traffic per 24-hour day	Primitive and unimproved (AB)	Bituminous surface treated (F)	Mixed bituminous (G)	High type bituminous (HI)	Portland cement concrete (J)	Total	Undivided	Divided	Daily vehicles miles
0–9	26.500	....	1.013	....	....	27.513	27.513	....	106.2
10–24	11.100	....	0.202	....	....	11.302	11.302	....	258.4
25–49	10.100	....	218.175	....	....	228.275	228.275	....	9838.6
50–99	....	....	506.775	....	0.020	506.795	506.795	....	33931.5
100–199	....	2.342	409.651	0.004	0.021	412.018	412.018	....	59362.6
200–299	....	....	219.158	....	0.058	219.216	219.216	....	55011.1
300–399	....	....	200.469	3.908	6.608	210,985	210.985	....	70675.5
400–499	....	....	209.318	....	0.084	209.402	209.402	....	92297.8
500–599	....	....	35.264	1.067	0.025	36.356	36.356	....	20273.6
600–699	....	....	23.601	15.133	....	38.734	38.734	....	24954.9
700–799	....	....	9.269	5.264	0.080	14.613	14.613	....	11020.6
800–899	....	....	38.433	0.005	0.298	38.736	38.736	....	34207.3
900–999	....	....	8.721	0.226	0.151	9.098	9.098	....	8755.5
1000–1249	....	....	19.309	0.885	0.296	20.490	20.490	....	23765.4
1250–1499	....	....	0.664	5.395	....	6.059	6.059	....	8316.6
1500–1999	....	....	6.317	10.157	....	16.474	16.474	....	27182.2
2000–2999	....	....	8.908	6.302	....	15.210	14.761	0.449	32296.6
3000–3999	....	....	0.328	1.067	0.152	1.547	1.547	....	4992.7
4000–4999	....	....	5.848	....	0.491	6.339	6.339	....	29736.2
5000–5999	....	....	3.134	8.483	....	11.617	0.466	11.151	64719.1
Over 5999	....	....	....	....	....	....	....	....	....
Total	47.700	2.342	1924.557	57.896	8.284	2040.779	2029.179	11.600	
Daily vehicle miles	735.0	252.9	500286.7	104673.4	5754.4	611702.4	548891.8	63221.0	611702.4
Average daily traffic	15	108	260	1808	695	300	270	5450	

NOTE—No graded and drained (C), soil surfaced (D), or gravel surface (E) remaining on the Federal aid system.

TABLE NO. 32

STATE HIGHWAY MILEAGE BY TYPE OF ROADWAY AND SYSTEM, DECEMBER 31, 1943

Type	Primary State			Secondary State			Total State Highway System
	Federal aid	Potential Federal aid	Totals	Secondary Federal aid	State	Totals	
Primitive	....	....	....	....	331.800	331.800	331.800
Unimproved	47.700	31.900	79.600	329.487	923.143	1,252.630	1,332.230
Graded and drained	....	....	....	27.236	232.105	259.341	259.341
Gravel or stone	0.987	79.537	80.524	98.827	407.795	506.622	587.146
Bituminous surface treated	....	....	....	22.705	15.423	38.128	38.128
Mixed bituminous	1,945.492	339.901	2,285.393	314.869	211.324	526.193	2,811.586
Bituminous penetration	20.752	....	20.752	0.978	5.034	6.012	267.764
Bituminous concrete	39.480	....	39.480	1.700	....	1.700	41.180
Portland cement concrete	7.341	0.067	7.408	....	3.000	3.000	10.408
Dual	11.455	....	11.455	0.282	0.093	0.375	11.830
Totals	2,073.207	451.405	2,524.612	796.084	2,129.717	2,925.801	5,450.413

TABLE NO. 33

COMPARATIVE DATA ON STATE MOTOR VEHICLE REGISTRATION FEES RECEIVED 1940–1943[1]

	1940	1941			1942			1943		
			Percent of 1940			Percent of 1941			Percent of 1942	
Month	Receipts	Receipts	Month	To date	Receipts	Month	To date	Receipts	Month	To date
January	$108,799	$77,281	61.0	....	$85,843	111.1	....	$45,237	52.7	....
February	82,949	88,111	106.2	86.3	69,775	79.2	94.1	56,973	81.7	65.7
March	34,531	70,127	203.1	104.1	94,725	135.1	106.3	95,788	101.1	79.1
April	19,407	24,091	124.1	105.7	35,918	149.1	110.3	66,280	184.5	92.3
May	13,537	15,316	113.1	106.1	27,498	179.5	114.1	34,276	124.6	95.2
June	9,651	13,459	139.5	107.3	12,336	91.7	113.1	22,181	195.7	98.4
July	11,427	19,709	172.5	109.9	11,010	55.9	109.4	14,703	133.5	99.5
August	9,075	8,192	90.3	109.3	9,144	111.6	109.5	6,679	73.0	98.8
September	6,549	10,968	167.5	109.5	6,551	59.7	107.8	14,839	226.5	101.2
October	7,719	7,003	90.7	110.1	5,559	79.4	107.2	7,214	129.8	101.6
November	5,477	4,970	90.7	109.7	7,606	153.0	107.9	6,682	87.9	101.3
December	3,017	2,738	90.7	109.5	3,399	124.1	108.0	6,566	193.2	102.2
Totals	$312,138	$341,965	....	....	$369,364	....	....	$377,418	....	....

[1] Compiled from reports prepared by the State Motor Vehicle Department. Receipts include all fees collected.

TABLE NO. 34

COMPARATIVE DATA ON STATE MOTOR VEHICLE FUEL TAX RECEIPTS 1940–1943[1]

Month	1940	1941			1942			1943		
	Net amount accruing to State	Net amount accruing to State	Percent of 1940		Net amount accruing to State	Percent of 1941		Net amount accruing to State	Percent of 1942	
			Month	To date		Month	To date		Month	To date
January	$77,825	$90,801	116.7	....	$101,086	111.3	....	$88,458	87.5	....
February	79,966	90,321	112.9	114.8	106,698	118.1	114.7	71,812	67.3	77.1
March	99,601	110,915	111.4	113.5	131,125	118.2	116.1	94,486	72.1	75.2
April	113,898	125,596	110.3	112.5	135,220	107.7	113.5	93,347	69.0	73.4
May	125,632	146,771	116.8	113.6	140,498	95.7	108.9	106,180	75.6	73.9
June	147,769	162,151	109.7	112.7	151,901	93.7	105.5	93,372	61.5	71.4
July	164,091	193,150	116.5	113.7	166,184	86.0	101.4	117,718	70.8	71.3
August	170,779	195,414	114.4	113.8	159,123	81.4	97.9	104,175	65.5	70.5
September	150,072	168,775	112.5	113.7	160,801	95.3	97.6	113,113	70.3	70.4
October	135,377	157,032	116.0	113.9	142,939	91.0	96.9	128,549	89.9	72.5
November	115,967	135,751	117.1	114.2	163,400	120.4	98.9	103,369	63.3	71.5
December	107,460	131,377	122.3	114.8	82,592	62.9	96.1	[2]102,997	124.7	74.2
Totals	$1,488,437	$1,708,054	....	....	$1,641,567	....	....	$1,217,566	....	....

[1] Compiled from the records of the State Tax Commission.

[2] Actual amount $102,976. Deduction of $21 to cover adjustments for previous months.

TABLE NO. 35

COMPARATIVE DATA ON STATE CARRIER LICENSE FEE COLLECTIONS 1940–1943[1]

	1940	1941			1942			1943		
			Percent of 1940			Percent of 1941			Percent of 1942	
Month	Receipts	Receipts	Month	To date	Receipts	Month	To date	Receipts	Month	To date
January	$85,481	$60,682	71.0	....	$107,739	177.5	....	$121,543	112.8	....
February	69,909	133,593	191.1	126.7	144,067	107.8	129.6	160,036	111.1	111.8
March	28,734	29,717	103.4	121.7	29,323	98.7	125.5	26,578	90.6	109.6
April	15,277	17,896	117.1	121.3	40,574	226.7	133.0	22,279	54.9	102.7
May	12,729	7,629	59.9	117.6	21,373	280.2	137.5	9,946	46.5	99.2
June	8,925	15,615	175.0	119.9	9,670	61.9	133.0	8,738	90.4	99.0
July	12,258	16,184	132.0	120.6	17,783	109.9	131.7	16,399	92.2	98.6
August	8,216	10,058	122.4	120.6	6,505	64.7	129.4	8,282	127.3	99.1
September	5,439	8,665	159.3	121.5	8,742	101.0	128.6	5,259	60.2	98.3
October	10,517	8,097	77.0	109.7	6,029	74.5	127.2	6,446	106.9	98.4
November	1,892	4,087	216.0	120.4	286	7.0	125.6	5,554	1941.9	99.7
December	2,557	4,612	180.4	121.0	55	11.9	123.8	12,966	23,574.5	103.0
Totals	$261,934	$316,835	....	....	$392,146	....	....	$404,026	....	....

[1] Compiled from the records of the State Controller. Act administered by State Public Service Commission.

TABLE NO. 36

COMPARATIVE DATA ON MOTOR VEHICLES REGISTERED 1940–1943[1]

Month	1940 Motor vehicles	1941 Motor vehicles	1941 Percent of 1940 Month	1941 Percent of 1940 To date	1942 Motor vehicles	1942 Percent of 1941 Month	1942 Percent of 1941 To date	1943 Motor vehicles	1943 Percent of 1942 Month	1943 Percent of 1942 To date
January	16,749	11,725	70.0	....	13,951	119.0	....	6,903	49.5	....
February	11,822	13,365	113.1	87.8	9,719	72.7	94.3	8,566	88.2	61.1
March	4,830	9,248	191.5	102.8	12,026	130.0	104.0	13,052	108.5	79.9
April	2,460	3,074	125.0	104.3	4,877	158.7	108.4	7,793	159.8	89.5
May	1,781	1,975	110.9	104.6	3,420	173.2	111.7	4,495	131.4	92.8
June	1,184	1,620	136.8	105.6	1,766	109.0	111.6	2,969	168.1	95.7
July	1,515	2,671	176.3	108.3	1,299	48.6	107.7	2,006	167.3	97.3
August	1,176	1,075	91.4	107.8	870	80.9	107.1	[3]680	78.2	96.9
September	761	1,465	192.5	109.3	752	51.3	105.3	1,858	247.0	99.3
October	....	955	....	....	572	59.9	104.4	946	165.4	100.0
November	[2]1,815	[2]578	107.0	109.2	754	130.4	104.7	639	84.7	99.8
December	....	409	....	....	400	97.8	104.7	491	122.8	100.0
Totals	44,093	48,160	....	....	50,406	....	....	50,398		

[1] Compiled from reports prepared by the State Motor Vehicle Department.

[2] Reports by months for the last quarter not available.

[3] Includes 30 units covering adjustment for month of March.

TABLE NO. 37

COMPARATIVE DATA ON STATE MOTOR VEHICLE IMPOST REVENUE 1940-1943[1]

	1940	1941			1942			1943		
			Percent of 1940			Percent of 1941			Percent of 1942	
Month	Revenue	Revenue	Month	To date	Revenue	Month	To date	Revenue	Month	To date
January	$272,105	$228,764	84.1	....	$294,668	128.8	.....	$255,238	86.6	
February	232,824	312,025	134.0	107.1	320,540	102.7	113.8	288,821	90.1	88.1
March	162,866	210,759	129.4	112.5	255,173	121.1	115.8	216,852	85.0	87.4
April	148,582	167,583	112.8	112.6	211,712	126.3	117.7	181,906	85.9	87.1
May	151,898	169,716	111.7	112.5	189,369	111.6	116.8	150,102	79.1	86.0
June	166,345	191,225	115.0	112.8	173,907	90.9	112.9	121,291	71.5	84.2
July	187,776	229,043	122.0	114.1	194,977	85.0	108.7	148,820	76.3	83.3
August	188,070	213,664	113.6	114.1	174,772	81.8	105.4	119,136	68.2	81.8
September	162,060	188,408	116.3	114.3	176,094	93.5	104.2	133,211	75.6	81.5
October	153,613	172,132	112.1	114.1	154,527	89.8	103.0	112,209	92.0	82.3
November	123,336	144,808	117.4	114.3	171,292	118.3	104.0	115,595	67.5	81.2
December	113,034	138,727	122.7	114.8	86,046	57.8	101.5	122,529	142.1	83.2
Totals	$2,062,509	$2,366,854	..	....	$2,408,077			$1,999,010		

[1] Includes Motor Vehicle Fuel Tax, Motor Carrier License Fees, and Motor Vehicle Registration Fees.

TABLE NO. 38

LICENSES ISSUED JULY 1, 1942, TO JUNE 30, 1944

Operators			Chauffeurs			
Original	Renewal	Duplicate	Original	Renewal	Duplicate	Total
3,294	....	....	1,605	2,308	465	7,672
11,372	35,391	1,043	2,565	2,205	129	52,705
4,063	1,152	224	813	1,743	52	8,047
18,729	36,543	1,267	4,983	6,256	646	68,424

TABLE NO. 39

REVOCATIONS OF DRIVING PRIVILEGES, JULY 1, 1942, TO JUNE 30, 1944

Drunk driving	246
Reckless driving	2
False affidavit	14
Unlawful taking of vehicle	11
Driving while license revoked	2
Drug addiction	1
Permitting unlicensed person to drive	1
Negligent homicide	2
Hit and run	3
Involuntary manslaughter	1
Violating restrictions	1
Habitual negligence	1
Transporting drugs	1
Total	286

TABLE NO. 40

SUSPENSIONS OF DRIVING PRIVILEGES, JULY 1, 1942, TO JUNE 30, 1944

Two or more violations	74
Reckless driving	54
False affidavit	22
No driver's license	5
Unlawful taking of vehicle	2
Failure to pass test	3
Failure to give correct information	2
Failure to surrender license	1
Other	2
Total	165

TABLE NO. 41

DRIVERS' EXAMINATIONS RESULTS

		Percent of failures	Percent of permits issued
Total permits issued	7,431	....	100.00
Failed			
Eye test	46	1.0	.6
Road signs	2,419	57.3	32.6
Road rules	1,644	39.1	22.1
Driving test	99	2.3	1.3
Other	12	.3	.2
Total failures	4,220	100.0	56.8

TYPOGRAPHICAL
UNION LABEL
WASHOE

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